DECEMBER 1995

THE UNESCO COURIER

TROGLODYTES
a hidden world

50 years ago...
Commemorating the end of the Second World War

INTERVIEW WITH
JEAN DANIEL

ENVIRONMENT:
PROTECTING PLANT LIFE

HERITAGE:
LUXEMBOURG: THE BALCONY OF EUROPE

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E C U T R S

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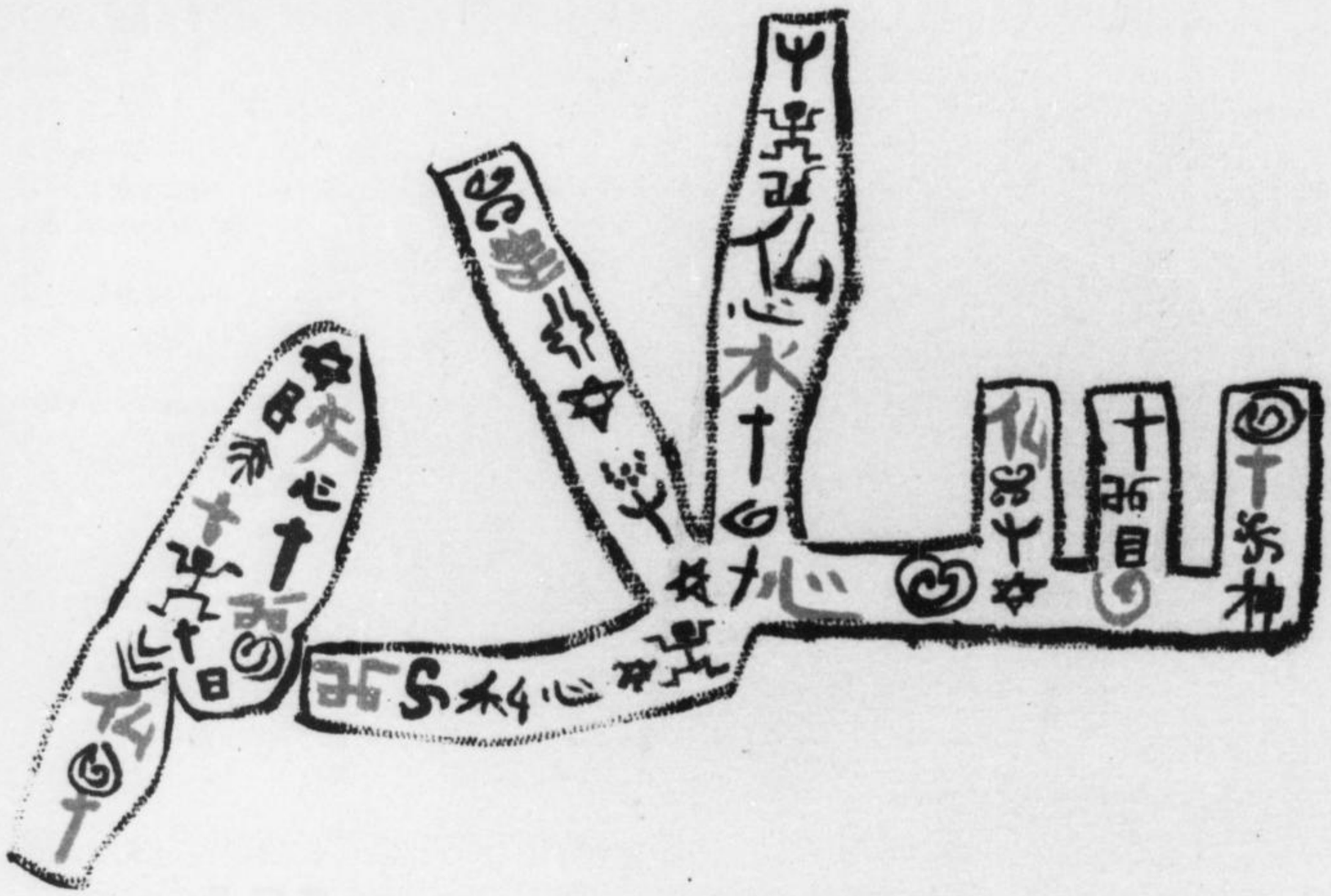

The big peace

1992

by Carlos Eduardo Abbud

Within an outline of the Arabic word for peace, Brazilian artist Carlos Eduardo Abbud has drawn Hebrew, Christian, Polynesian, Celt, Amerindian and Shinto-Buddhist religious symbols.

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Rifa'ah el-Tahtawi
An Egyptian scholar, telling of his first visit to France in 1826

How different our world is from that described by el-Tahtawi! Nowadays radio, movies and TV make it possible to know how other people live, eat, work and love. But this doesn't always allow us to penetrate other value systems or grasp the deep-seated reasons for behaviour different from our own.

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50 YEARS AGO...
Commemorating the end of the Second World War (1939-1945)

THE UNESCO COURIER
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Published monthly in 30 languages and in Braille

"The Governments of the States parties to this Constitution on behalf of their peoples declare,
"that since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed . . .
"that a peace based exclusively upon the political and economic arrangements of governments would not be a peace which could secure the unanimous, lasting and sincere support of the peoples of the world, and that the peace must therefore be founded, if it is not to fail, upon the intellectual and moral solidarity of mankind.
"For these reasons, the States parties . . . are agreed and determined to develop and to increase the means of communication between their peoples and to employ these means for the purposes of mutual understanding and a truer and more perfect knowledge of each other's lives. . . ."

EXTRACT FROM THE PREAMBLE TO THE CONSTITUTION OF UNESCO, LONDON, 16 NOVEMBER 1945

Jean Daniel

The state of the nation

■ At a time when nations seem increasingly threatened by the process of globalization, the idea of the nation-state—the subject of your latest book—is giving rise to a good deal of thought and comment.

Jean Daniel: After a long period of neglect the nation has again become a highly topical subject, especially in the United States and Germany. Each month dozens of books are published on this theme in different parts of the world. I trace the origins of the idea of the nation to Johann Fichte's[1] famous *Addresses to the German Nation*, a book which is outstanding both for its depth and objectivity and for its impact on European thought.

No-one else has ever made a more subtle and penetrating eulogy of what is called "the right of blood"[jus sanguinis]. Fichte maintains that without the nation—real or imaginary—a people has no future, and that the Germans are fortunate because they have had a national experience made possible by the existence of a language and racial purity. He expounds this in such philosophically sophisticated terms and in such noble language that few people have seen any connection between his views and the racist theories that were set forth later by Joseph de Gobineau[2] and Houston Chamberlain[3] and were to lead to Alfred Rosenberg[4] and Hitler.

In my opinion, Fichte remains topical because in some places there is a persistent feeling of nostalgia for "the right of blood", unpopular though the concept may be among Western elites.

■ Could you give some examples?

J. D.: Examples of this nostalgia can be found in ethnic and religious groups in the Baltic states, in Ukraine, in Georgia, in Armenia, Azerbaijan and of course in the former Yugoslavia, even though in some cases the heritage of the right of blood seems doubtful.

The example of Israel is very interesting. On the one hand Israel welcomes people from all over the world who are often (especially the Russians) the product of ethnic mixing. On the other hand, marriages between Jews and non-Jews are forbidden in the diaspora[5]. And since proselytism is out of the question and conversion is a difficult enterprise, marriage between Jews continues to be the ideal. Sometimes this consanguinity is given a dangerous theological significance: that of a holy alliance with a distinctive people which must remain pure, the people to whom God speaks.

■ And the Arab countries?

J. D.: In theory, Islam is a universal religion which is hospitable to all peoples and cultures. But in reality it respects the right of blood.

■ Is Islam more progressive in this respect, since anyone is a potential convert?

J. D.: Don't forget that St. Paul, who lived in pre-Islamic times, abolished the need to be circumcised before becoming a Christian. That did not prevent certain inquisitors from considering that converted Jews were not proper Christians.

For Muslims it is inter-ethnic marriages rather than inter-religious marriages that pose a problem. But it comes down to the same thing—we are dealing with prohibitions which show that in the final analysis what counts is the right of blood.

What's more, the right of blood is making a strong come-back all over the world, directly and indirectly, and is being justified in various ways—by the idea that intermingling does not succeeed, or that it leads to bastardization or to the dissolution of identity. . . . To some extent, many people who aspire to universality tell themselves that in the end it is better to achieve it via the community.

■ This debate was inaugurated by the French Revolution, which formulated two conflicting ideas of the nation. On the one hand there is the abstract nation that springs from "free contract" between autonomous, aware, responsible individuals, and on the other the real, physical nation that is a product of history and imposes itself on individuals, whether they like it or not. Or is this a simplification of what actually happened?

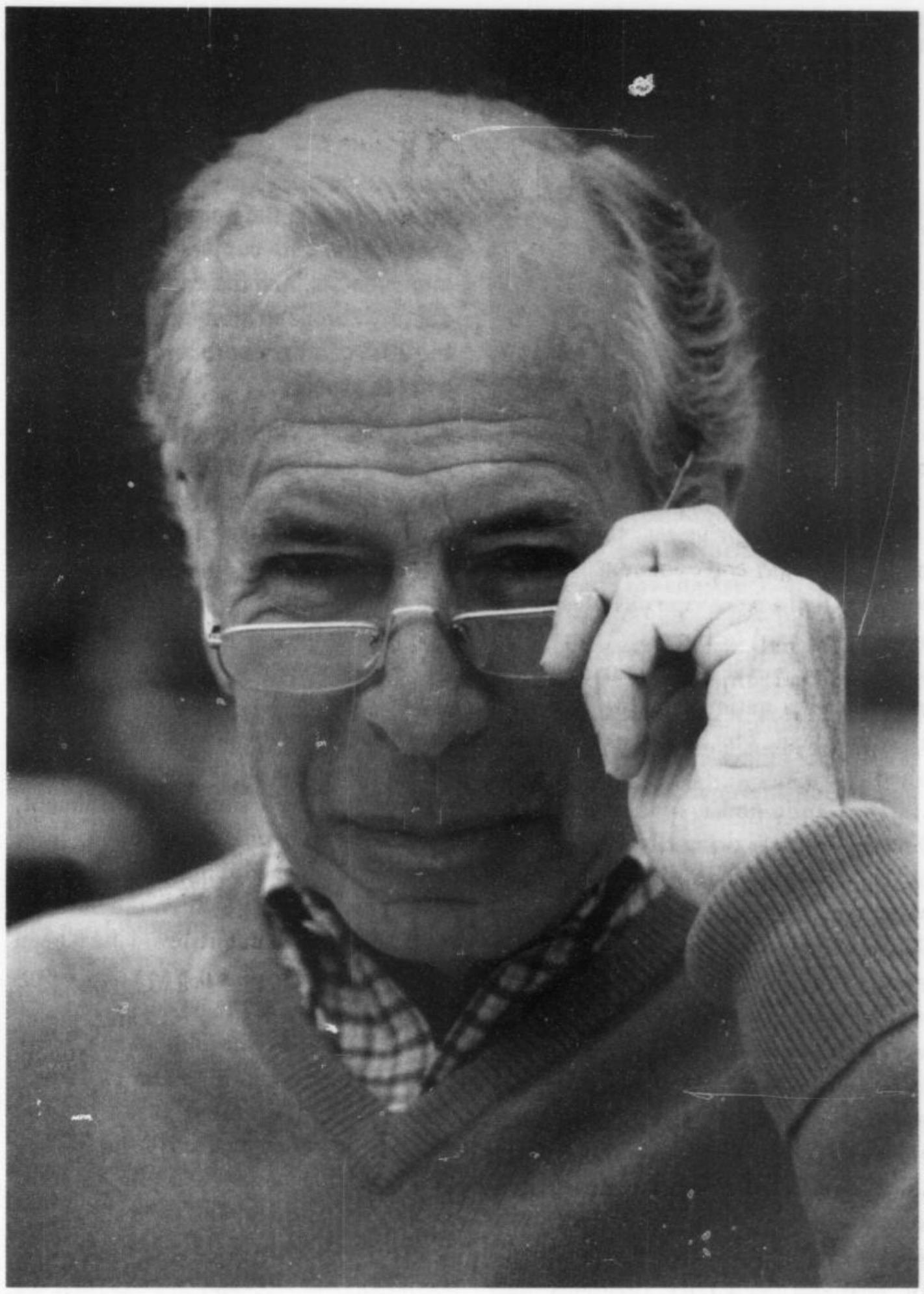
J. D.: Enthralling debates about this took place between the revolutionaries, especially concerning the emancipation of the Jews, the Protestants and the blacks.

When Stanislas de Clermont-Tonnerre[6] said "Everything to the Jews as individuals, nothing as a nation", he had enthusiastic supporters who did not believe in communities. But he also had detractors. His proposal was rejected. Someone came to see him and said: "I don't know any 'individual' Jews. I only know a community." Then his visitor explained how individuals detached from their community structures did not exist.

As for the Protestants, the Revolution gave them equality. It emancipated them and gave them access to positions

The right of blood is making a come-back all over the world.

The French writer and journalist Jean Daniel is founder-director of the Paris weekly Le Nouvel Observateur. *He has been an ardent champion of the cause of human dignity and a lucid and critical observer of the events of the last half century. The author of many novels and essays, he was recently awarded the Albert Camus prize for a collection of short stories entitled* L'ami anglais *(Paris, Grasset, 1994). Here he talks to Bahgat Elnadi and Adel Rifaat about the current evolution of the nation-state, the theme of his latest book,* Voyage au centre de la nation *(Seuil publishers, Paris, 1995).*



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from which they had been excluded. But they continued to define themselves in a way that was simultaneously religious and individual. And so at this period when God was deprived of his sovereignty, when the temporal was separated from the spiritual, when the individual was dazzled and overwhelmed by his freedom, French Protestants found a thoroughly gratifying form of integration: they had their cake and ate it too.

Things were more complicated for the blacks. Slavery was abolished, then reinstated. Economic questions complicated relations with the black community even further. The heirs of the Revolution behaved very badly and finally came out in support of slavery. All this is magnificently described by the Cuban writer Alejo Carpentier in his novel *Explosion in the Cathedral.*

To conclude, it is true that an abstract idea of the individual exists. The Declaration of the Rights of Man and of the Citizen of 1789 makes no allusion to the duties of the individual (in other words there is no bond with the community and no responsibility towards it). The only limitation on freedom is that one should not trespass on one's neighbour's freedom. Two counter-revolutionaries, Edmund Burke in England and Joseph de Maistre in France, later pointed out correctly that the men of 1789 were to some extent talking nonsense, that they had invented a creature which turns its back on human nature.

Of course, the need for a sense of community exists in all societies. It has been seen, for example, in the strength of tradition in Britain or in the heritage of the feudal monarchy in France, not to mention societies where the patriarchal principle is so strong that the individual is not only an abstraction but an absurdity. The community impinges constantly on the members of these societies from the cradle to the grave, notably through rites of initiation, marriage and sexuality. The individual derives his balance from the community, and when he is alone he feels protected by remembering his community.

So is it possible to strike a balance between individual freedom and solidarity with the community? One place where this balance has been found is the nation-state, which was constructed in eighteenth- and nineteenth-century Europe to meet this very need.

■ **Widely different ideas of the community have been proposed. . . .**

J. D.: In France, for example, there is a big difference between the ideas of Maurice Barrès[7] and Charles Maurras[8]. Barrès is a kind of aesthete of the French nation. For him the nation means having the same dead, and remembering them in the same way.

Jean Daniel

© Michèle Bancilhon

Maurras had a more vigorous idea of the nation. He said to Barrès: "Your dead interest me, but it's not mourning them that makes a nation. It's the fact that they are dead. The blood that has been shed."

De Gaulle had a similar idea. For him the nation is primarily an idea. Seen in this light, his thinking was much more progressive than that of François Mitterrand or of many African heads of state today. For De Gaulle the French nation is a certain idea of France and the hardships shared in serving this idea—but hardships shared with others, remember. France was made with foreigners.

The idea of shared hardship is essential here. Before there can be a nation there has to be a certain number of common memories, projects and hardships. The universal must be associated with what Simone Weil[9] calls *enracinement*—taking root. Here we have come a long way from the free individual of 1789, who asks himself every day "do I want to be French or not?"

■ Between the wars, in the societies of the South, the notion of the individual, abstract though it may have been, was nevertheless a spearhead that helped to dislocate religious and patriarchal structures. There was never any danger of being too abstract. On the contrary, patriarchal despotism was so deeply rooted that it took all the virulence of the abstract ideal of 1789 to overthrow it.

J. D.: Indeed. But in the West, the modern individual eventually went too far and severed all connection with the sacred. The problems he or she encountered in Europe were not the same as those experienced by modernist intellectuals on the other side of the Mediterranean.

■ In some ways the preoccupations of intellectuals in the South today recall those of the 19th-century European intelligentsia. And the crisis of the 19th-century European intelligentsia gives the 20th-century South a foretaste of what to expect. . . .

J. D.: This reminds me of a very telling anecdote. At the end of his life, Tolstoy—who had fought against serfdom in Russia and was largely responsible for its abolition—used to say when he saw the rather arrogant and vulgar behaviour of the former muzhiks: "How fine was the struggle in the days of serfdom!"

In just the same way, in the struggle for the freedom of the individual, the struggle itelf is a source of fulfilment. An ideal exists in its most open, most balanced form during the struggle waged on its behalf. When the battle is won, one sees that its goal has been betrayed or else that it was vain. Revolutions soon betray themselves.

As for the revolutions in the South during the first half of the twentieth century, the individual began to fulfil himself in the struggle. He found true fulfilment at the time when he was most committed and responsive to the call of his community at a time of danger. As soon as the struggle was over, his freedom was either confiscated by a dictatorship or, at best, impoverished.

■ There is a cyclical phenomenon, here. After the great age of triumphant nationalism, the idea of individual freedom—as defined by French humanism—was reaffirmed with new vigour. It is true that its fundamentalist negation has been quicker to occupy the ground. . . .

J. D.: Perhaps the expansion of French humanism complicated matters rather than simplified them. It made almost everyone schizophrenic. People experienced it on two levels—as a source of greater inner wealth but also of more conflicts and uneasiness. Eventually they became so unbalanced that they wanted to go back to the old-style community because it was simpler and more reassuring. Instead of seeing a particular richness in these two levels, as Senghor did, they saw them as a betrayal of the myth of a return to the past, of the myth of authenticity, of a golden age. This golden age never really existed but nostalgia for it made it possible to resist schizophrenia.

The five or six fundamentalists I have met during my life are former schizophrenics who have wanted to free themselves from their failure to discover a synthesis between the two civilizations and ideals that divided them. They said to themselves: "I only take one of them and I back it to the hilt so that I have a firm sense of reality on which I can rely." This perverse effect of the contagion of humanism is worth thinking about.

■ As far as perversity is concerned, we prefer to think about the perversity of states where the individual exists but lacks the protective garment of citizenship.

J. D.: It is true that citizenship was the vocation of the individual in the West. Many remedies for the failings we have been discussing can be found in citizenship, because the citizen is a responsible person. Pierre Mendès France[10] thought that freedom conferred more duties than rights and that national solidarity made non-stop claims on citizens. In the duties of the free citizen the individual finds a balance equivalent to that which in traditional societies is provided by dependence on the community.

But things have changed, even in the West, in recent decades. There have been two big changes—the coming of the affluent society, which has transformed the individual into a consumer,

Is it possible to strike a balance between individual freedom and solidarity with the community? The nation-state is a response to this need.

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and the development of the audiovisual media, which has transformed the individual into a televiewer. The ideal of the market economy, which has turned the individual into a competitive consumer, is at odds with humanist culture. Furthermore, as a televiewer, the individual has less and less need of elections and parliaments, reacting with increasing passivity to a procession of images, instead of making active judgments in the privacy of his conscience. The combination of the consumer and the televiewer is annihilating the citizen. It does not deprive him of freedom by imposing constraints but by the extent of the new needs it implants in him. The nation is threatened with dissolution by the market economy and by television.

■ Is it possible that the dissolution of the nation under the pressure of an increasingly globalized market will lead to larger supranational groupings, just as the 19th-century nation-states were formed out of statelets? This question is relevant not only for Europe and North America but also for the Arab world and sub-Saharan Africa. How else will survival in the 21st century be possible?

J. D.: What you describe may come about but it is not inevitable. I have noticed that major social phenomena are the product of reactions rather than actions. Social phenomena obey the law of the swinging pendulum. When the pendulum has swung too far one way, it swings back just as far in the other. This observation is perhaps less commonplace than it seems because it can lead to extremely tense situations.

To take one example, the idea of the swing of the pendulum has led scientists such as Claude Lévi-Strauss to talk of a "race tolerance threshold", which is a very dangerous notion. If you have too many foreigners in a given area, a rejection mechanism takes place. Lévi-Strauss has spent his life studying tribes that he admired so much that he wanted to protect their purity (in a sense he was in favour of the right of blood) and since he saw that intermingling led to acculturation, he came to believe that cultures have the right to protect themselves against each other. It is true that inputs from outside are sometimes necessary, but the dosage must be carefully watched. Ultimately,

The nation is threatened with dissolution by the market economy and by television.

Lévi-Strauss sees the world as a set of cultures that have the right to defend themselves but must not seek to dominate each other.

■ What do you think of the idea that our attitudes to the nation have taken us back into the 19th century?

J. D.: Unlike the French thinker Régis Debray, I don't believe that we have returned to the nineteenth century, because in the nineteenth century you had none of the phenomena—international exchanges, demographic factors, technology, planet-wide interdependence, the interpenetration of cultures, the abolition of distance, the babelization of languages—that you have today and which lead many people to feel that they are losing their identity.

To return to the example of France, since European citizenship does not exist and French citizenship is becoming diluted, many people will either fall back on nationalism or become spineless individuals. Elsewhere, retreat into religion and expressions of fundamentalism are more or less violent reactions to the radically new idea that we all inhabit a single planet. Where will all this lead to in the end? Since the trend towards globalization is irreversible, I think it is possible that nations may disappear under the combined effects of a sense of loss of identity, of consumption, of television and the absence of wars.

Think of the ideas put forward about the identity of France by the French historian Fernand Braudel. Braudel says, more or less, that France is a kind of miracle, a product of chance, and lists all the reasons why it should not have become a nation. There was no complementarity between the scattered pieces of France. There was no need for France to become France.

Nor is there any need today for Europe or the Arab world to form a federal unit. Millions of French and German people had to die before it was decided to give priority to economic interests and the construction of Europe began. First of all people felt the need to stop exterminating each other, then came the discovery of economic complementarity. Supranational groupings may or may not be made—it will all depend on human determination, not on some kind of historical inevitability. ■

1. German philosopher (1762-1814). His *Reden an die deutsche Nation*, 14 addresses given at the university of Berlin in 1807 and 1808, set forth his ideas on the foundations of national recovery after the collapse of Prussia.—Ed.

2. French writer (1816-1882), author of an "Essay on the inequality of the human races" (1853-1855; Eng. trans. 1915).—Ed.

3. British-born German writer (1855-1927), author of a pan-German racist theory expounded in his book *The Foundations of the 19th Century* (1899, Eng. trans. 1911) which influenced Hitler.—Ed.

4. German politician (1893-1946). A leading theorist of national socialism.—Ed.

5. The Jewish communities dispersed throughout the world.—Ed.

6. A representative of the nobility in the Estates General at the beginning of the French Revolution.—Ed.

7. French writer (1862-1923) and nationalist.—Ed.

8. French writer (1868-1952) and monarchist.—Ed.

9. French writer and philosopher (1909-1943).—Ed.

10. French politician (1907-1982).—Ed.

Retreat into religion and expressions of fundamentalism are more or less violent reactions to the radically new idea that we all inhabit a single planet.

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This issue comprises 52 pages, a 4-page insert between pages 2-3 and 50-51 and an 8-page photo supplement.

LETTERS TO THE EDITOR

MELIÈS, MAGICIAN OF THE SCREEN

When I read your double issue on the cinema ("A Century of Cinema", July-August 1995) I was surprised to find nothing about Georges Méliès, a great illusionist of the cinema and inventor of unforgettable special effects. Dubbed the "Magician of the Screen", he is held to have built the world's first studio, in Montreuil, an eastern suburb of Paris. Some 150 of his films have been preserved, and many books have been written about him.

This cobbler's son, who himself started out in life in the shoe business, really deserved a place in your excellent issue.

Michel Juignet
President of the French Cobblers' Federation
Paris (France)

WELL INFORMED

I should like to point out a mistake in your September 1995 issue ("Women—one half of heaven"). The well shown in the photo on page 43 cannot possibly be a Tuareg well. The Tuareg live mainly in Mali and Niger. The well shown in the photo is more likely to belong to the nomads known as the Beidane.

André Patris
Fontenay-aux-Roses
(France)

1945 REMEMBERED

I think it is extremely unfortunate that so far this year you have not devoted an issue or even an article of the *Unesco Courier* to the fiftieth anniversary of 1945, the year which saw the liberation of the concentration camps and the victory of the forces of peace and democracy over the unspeakable barbarity of Nazism—events that led to the foundation of Unesco.

I feel this not only because I am a survivor of Nazi barbarity (I fought in the French Resistance and was deported to Auschwitz). I am thinking of all my friends, boys and girls of twenty or younger, known or (in most cases) unknown, who will never be able to bear witness. By the time of the centenary in 2045, the last surviving voices will of course have fallen silent.

S. Radzinski
Paris (France)

See pages 23-30 of this issue.—Ed.

ASSUMED NAME

In your "Century of Cinema" issue (July-August 1995) you say that the brilliant young film-maker Milco Mancevski is "Macedonian" by nationality.

I should like to remind you that United Nations resolution No 617/1993, which also applies to Unesco, refers to Mr. Mancevski's country as the "Former Yugoslav Republic of Macedonia" . . . pending attribution of a definitive name, which I hope will come in the near future.

Dimitris Papastamos
Permanent Delegate of Greece to Unesco

MORE AFRICAN WRITERS, PLEASE!

I like your magazine very much and regret that I did not subscribe to it sooner. My family and high-school friends also enjoy reading it.

But there is one thing that shocks us. We have noticed that the *Courier*, particularly since September 1994, has taken no interest in our continent. My teachers have always told me that writing originated in Africa, in Egypt, to be precise. However, in your April 1995 issue, "The origins of writing", you say it began in Mesopotamia! What's more, why can't you find African specialists to contribute to your magazine? I note that the author of the article on Africa published in your April issue is a British linguist.

Nor do Africans feature in your interviews. And judging from the *Courier*, one might think that there are no heritage sites in Africa either. To date you have only published articles about World Heritage sites on other continents.

United Nations institutions exist for the whole planet. It is impossible to imagine that they might be infected by the infamous virus of racism.

So, more African writers, please!

Théophile Azonglahoun
Mono
(Benin)

Our themes are not treated in a spirit which is confined to any single continent or country as such. We are concerned above all that the viewpoints advanced on each theme should reflect the widest possible range of philosophical and cultural attitudes. Nearly all this year's issues, for example, have included an African perspective. Among the personalities we have interviewed in recent years are the film-maker Sembène Ousmane, the musician Manu Dibango, and the historian Joseph Ki-Zerbo.—Ed.

Month by month

The Prime Minister of Israel was assassinated on Saturday 4 November as he was leaving a peace rally in Jerusalem. He was murdered by a Jewish fundamentalist who was reported as saying that he had "acted on God's order" to punish Yitzhak Rabin because Rabin had agreed to share Palestine with the Palestinians.

"The hawk with wings of a dove"[1] was one of seven persons, each honoured as a peace-maker by UNESCO, profiled in the previous issue of the *Unesco Courier*. These exceptional men violated tribal taboos because of their belief that, by acknowledging the position of those who differ from them, people gain stature rather than lose it. Abraham Lincoln and Mahatma Gandhi are but two of the great historical figures who paid the price for overstepping this mark before Yitzhak Rabin. Who, one wonders, will be next on the list? The same threat hovers over Peres, Arafat and Mandela.

Political assassination, the supreme weapon of terrorism, is not a new phenomenon. It makes its grim appearance at turning points in history when, after a long period of violent confrontation between two camps, a chance of reconciliation suddenly appears. A leader who is bold enough to seize that opportunity becomes a vulnerable target for those on his own side who are totally committed to the violence on which he has turned his back. He has understood that the conflict must end; they think that it must go on forever. He has begun to believe that the enemy can become a neighbour, a partner, a friend. For them the enemy will always be the enemy.

In the period we are living through today—as Jean Daniel remarks in the interview published in this issue[2]—people in many countries are being driven by suspicion and rejection of the unfamiliar and are hauling up drawbridges against the outside world.

At a time when the process of globalization is bringing us closer together, those who are of a receptive, conciliatory frame of mind are being challenged by those whose reaction is to exclude and reject. In such conditions, political assassination may well spread.

This is a threat it would be absurdly simplistic to combat only with the weapons of repression and counter-insurgency. To get to the root of the evil it is necessary to attack what lies at the heart of all fanaticism—the conviction that one has a monopoly of a higher truth, that one's cause is more valid than all the rest, especially when it bears a label that is supposedly of divine manufacture.

It cannot be repeated too often that what is sacred is life, dignity and individual freedom; that each people has its own interests and should see that they are respected, but that it has no right to set them up against the wider interests that it shares with humanity as a whole.

All this is admirably set forth in the Universal Declaration of Human Rights proclaimed fifty years ago by the United Nations. Now is a particularly good time to read this document again.

BAHGAT ELNADI AND ADEL RIFAAT

1. See pages 26-27.
2. Pages 4-7

Life below ground

by Jacek Rewerski

Troglodyte communities down the centuries have created a little-known form of architecture that demonstrates exceptional versatility and resourcefulness

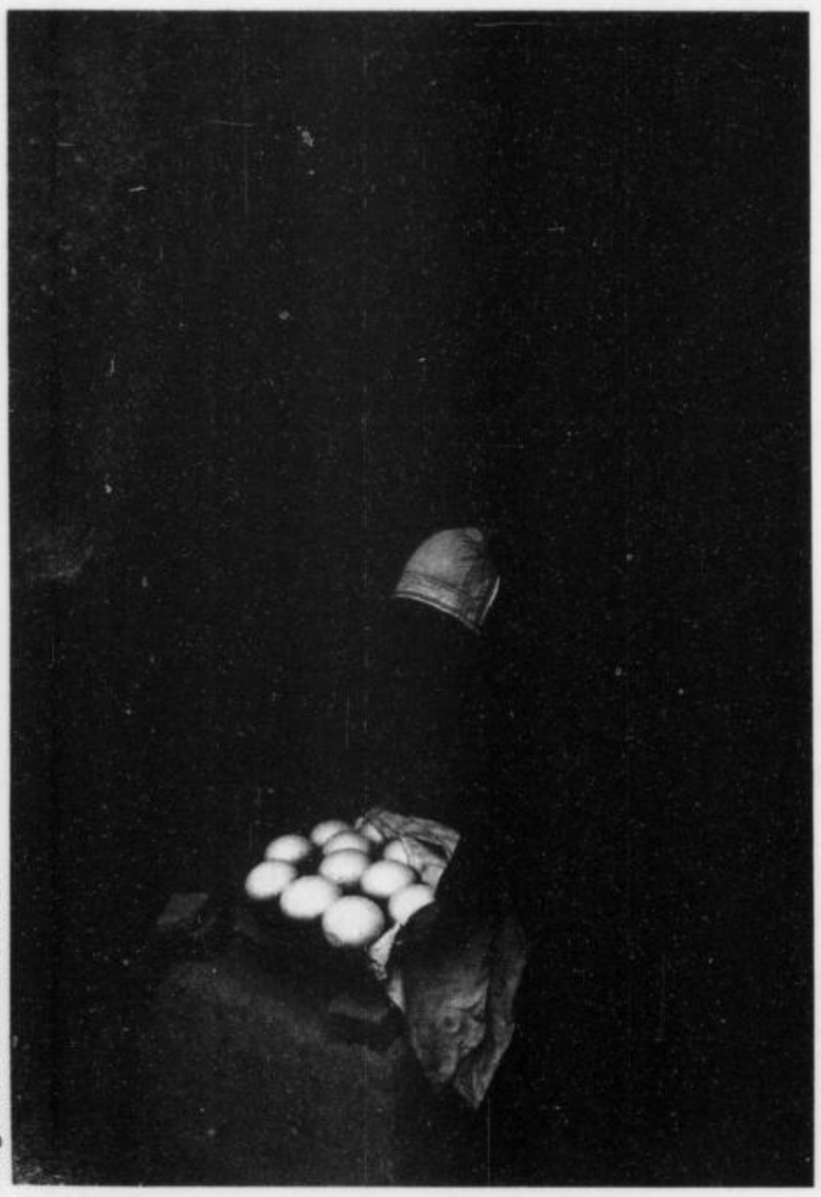
Strictly speaking, troglodytes are people who live in caves hollowed out by human agency. The earliest of them lived in the New Stone Age, when societies abandoned hunting and turned to farming and animal husbandry. Unlike their ancestors, the hunters of the Old Stone Age who took temporary refuge in natural caves against bad weather or attack, troglodytes (the word is derived from the Greek *trogle*, hole, and *dunein*, enter) used a favourable geological environment (soft but not friable rock) to create areas that could be used as dwellings and for economic activity as well as for worship, burial and defence.

It is simpler to hew a shelter out of rock than to build one, but considerable understanding of the natural environment is called for, as well as a remarkable capacity to adapt to it. Contrary to what is often thought, the underground dwelling is not a backward form of architecture but rather a more economical way of living, above all in regions where building materials such as wood are rare. As a result, most troglodyte dwellings are found in arid regions, where the big differences between day-time and night-time temperatures and the frequency of sandstorms are an incentive to search for serviceable shelter.

Hewn from the living rock

To a greater extent than natural caves, "artificial" underground dwellings are designed on a human scale to meet human needs. The economic and ecological advantages of this ancient form of habitat, especially stability of temperature, have attracted the interest of modern architects, who believe that it holds rich possibilities for the present and the future.

The oldest known troglodytic site is at Beersheba in Israel, where thirty-odd underground dwellings dating from the fourth millennium B.C. were excavated in the 1950s. The dwellings, which could house between 200 and 300 people, are positioned at intervals along a two-kilometre-long site on the banks of a stream. At the neolithic site of Banpo, in



Serge Sibert © Cosmos, Paris

Kgœvsky © Ask Images, Paris

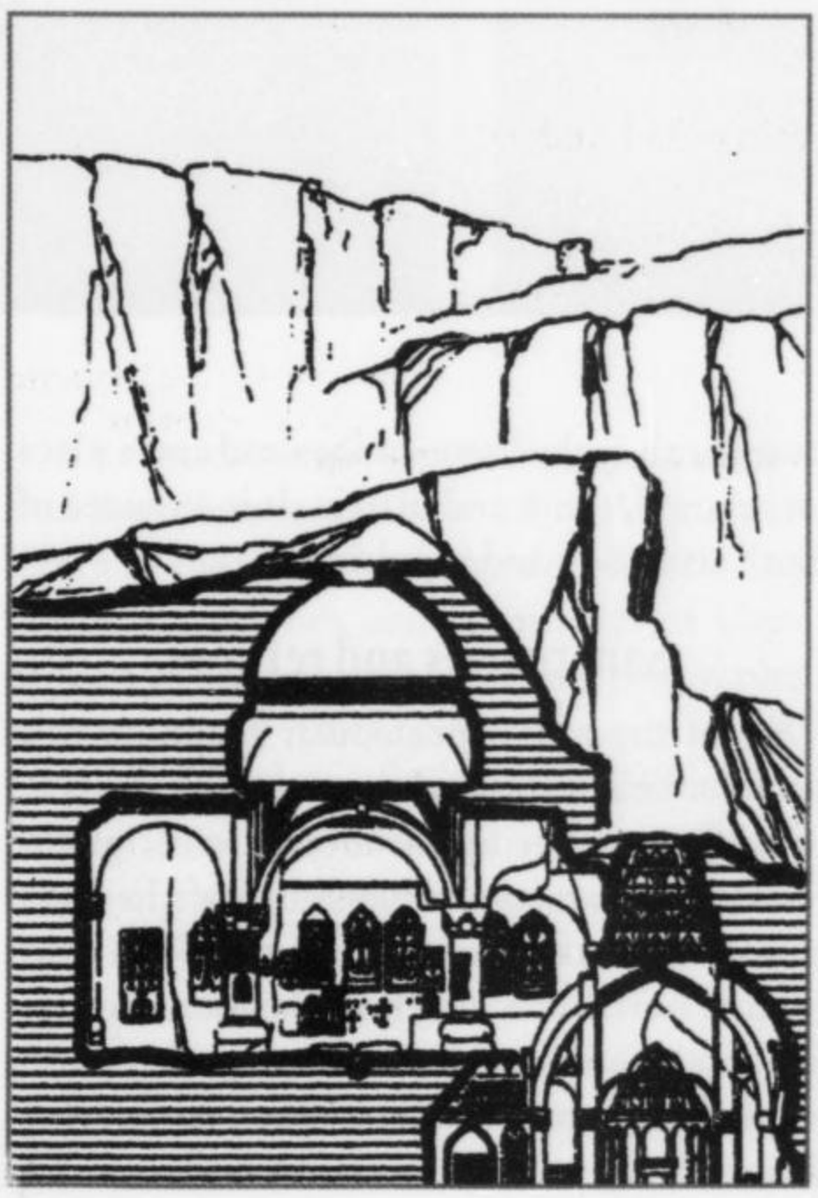
Left, a member of a troglodyte group in China's Shanxi Province.

Below, the Golden Temple of Dambulla (Sri Lanka).

© C. Lenars, Paris

Bamian Valley (Afghanistan). At centre is the "Little Buddha", a 38-metre-tall statue which was sculpted in the rock face in the 4th-5th centuries. The cliffs are perforated with monks' cells.

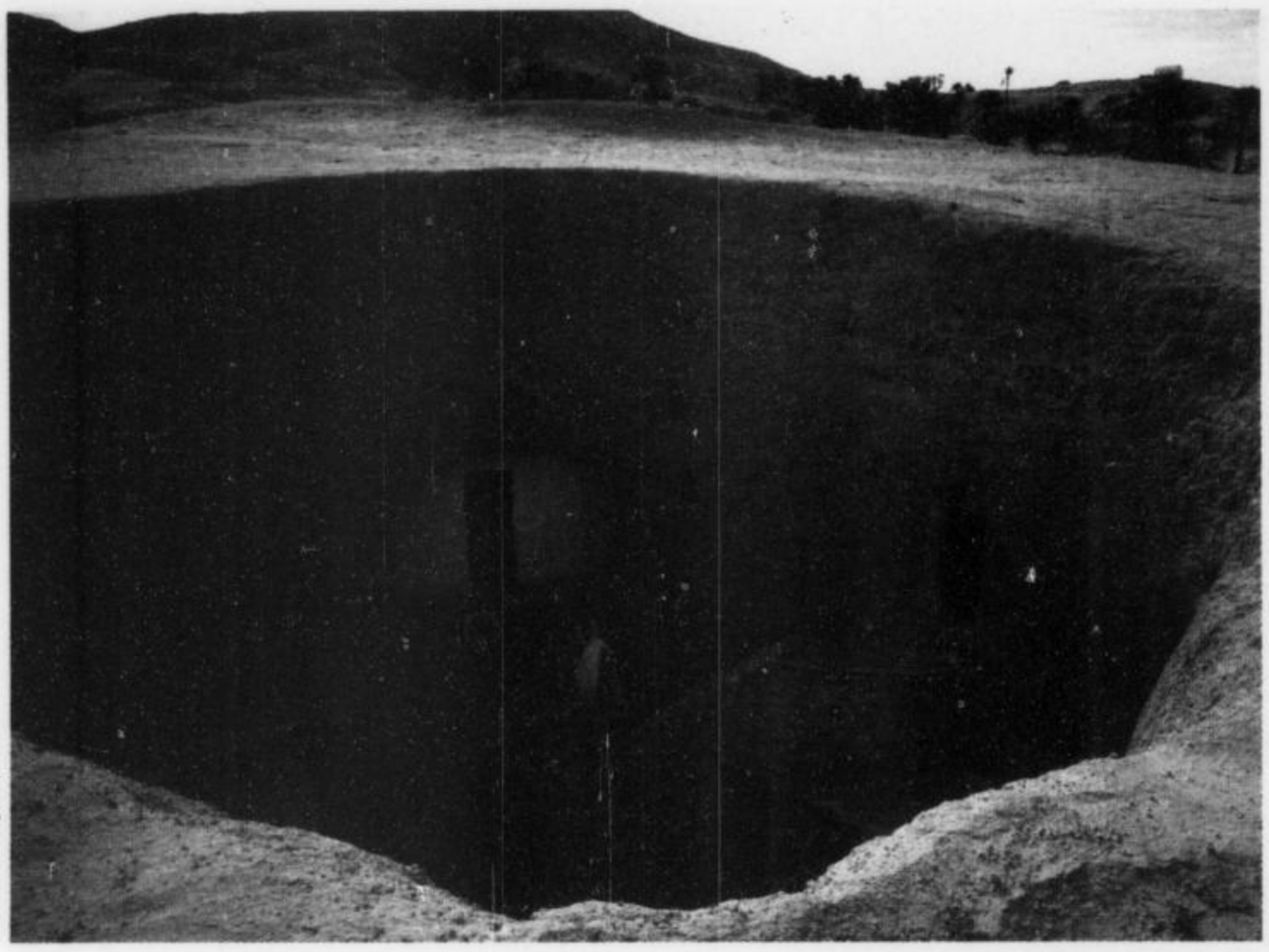
Left, cross-section of the monastery and church of Gheghrard (Armenia).



Drawing taken from *Documenti di Architettura armena*, Milan

China's Shaanxi province, there are extensive remains of hollowed-out dwellings which prefigure settlements that appeared in China later on. The prehistoric site of La Madeleine in the Périgord region of France, which has given its name to an important culture of the Old Stone Age, is interesting on two grounds. Firstly, it shows how troglodytism began in rock shelters that were first used by hunters and then extended by digging. Secondly, it was inhabited over an extraordinarily long period which lasted, with interruptions, from the Magdalenian (10,000 B.C.) to the sixteenth century.

Troglodytism belongs to a very ancient and widespread tradition which still continues to be practised. There are more than 40 million troglodytes in China today. In Tunisia, ancient dwellings hewn vertically out of the rock have been transformed into attractive hotel complexes. Remarkable examples of cave-dwelling communities still exist in Spain, Italy and France. In the Saumur

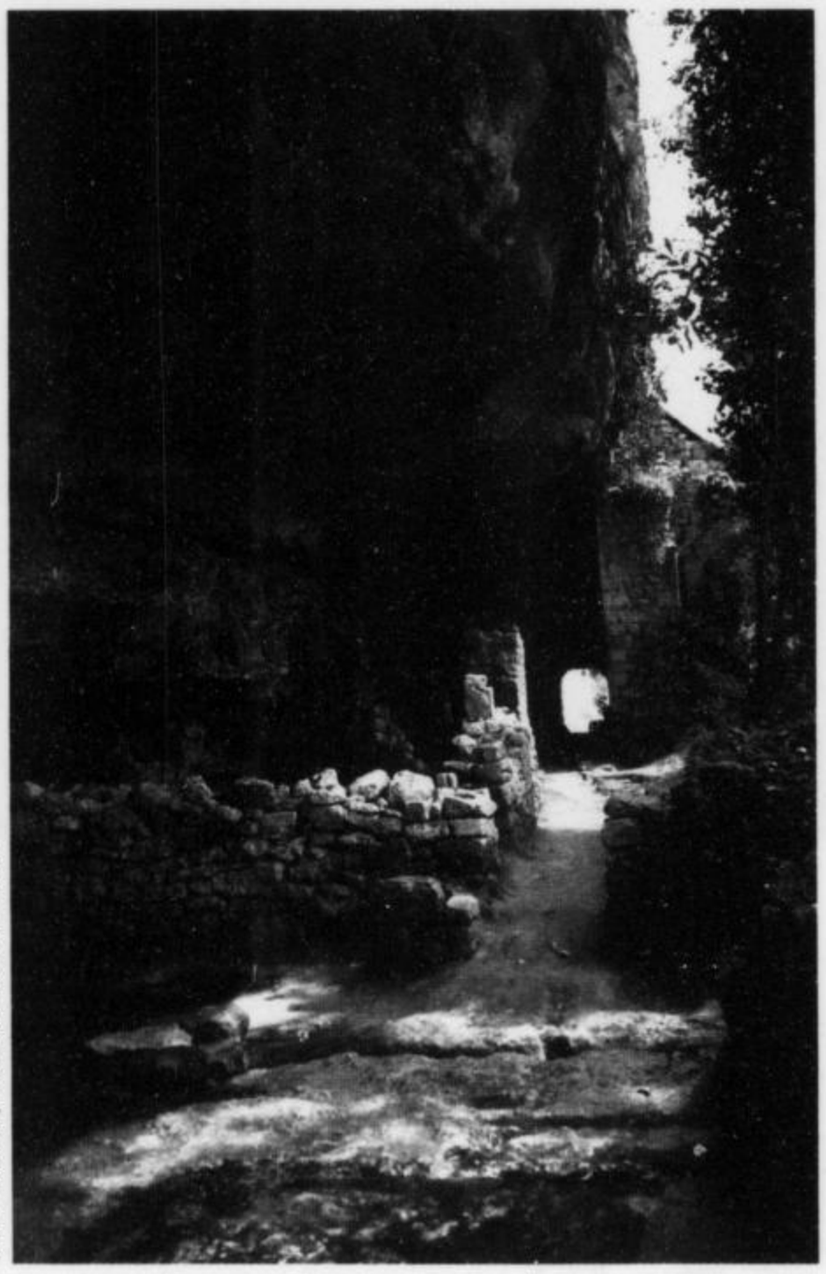


Weiss © Rapho, Paris

A dug-out dwelling in Matmata (Tunisia).

region of France, near the river Loire, many cave dwellers enjoy the same amenities as householders who live above ground. At the same time many troglodytic sites have been abandoned, many are deteriorating and will soon be beyond repair, and others have disappeared entirely, even if some are being renovated thanks to tourism. Is troglodytism merely a survival from a bygone age which will one day be forgotten?

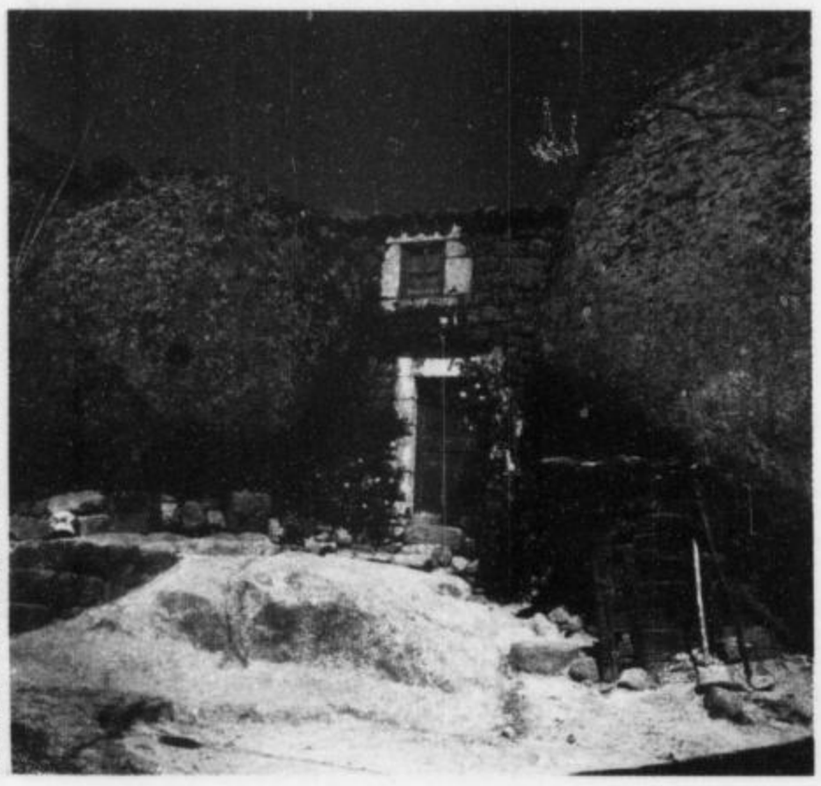
As an original way of life and form of architecture, troglodytism is part of the world's cultural diversity. But the traditional systems to which it belongs and which have functioned for thousands of years now seem doomed gradually to disappear under the pressure of growing standardization. Both the ancient and the modern forms of the heritage are in danger. Troglodytism is little known and tends to be a source of suspicion, largely because of the ambiguous image of the underground world, regarded in many cultures both as the home of the dead and a place of renewal, tomb and matrix. It is a source of both attraction and repulsion.



© J. Rewerski, Mozé-sur-Louet, France

A rock shelter made by a combination of hewing and building in the Dordogne region of France.

Y. E. Brandily © Ask Images, Paris



© Atelier d'Architecture J. P. Loubes, Bordeaux

The village of Monsanto (Portugal) nestles amidst massive granite boulders.

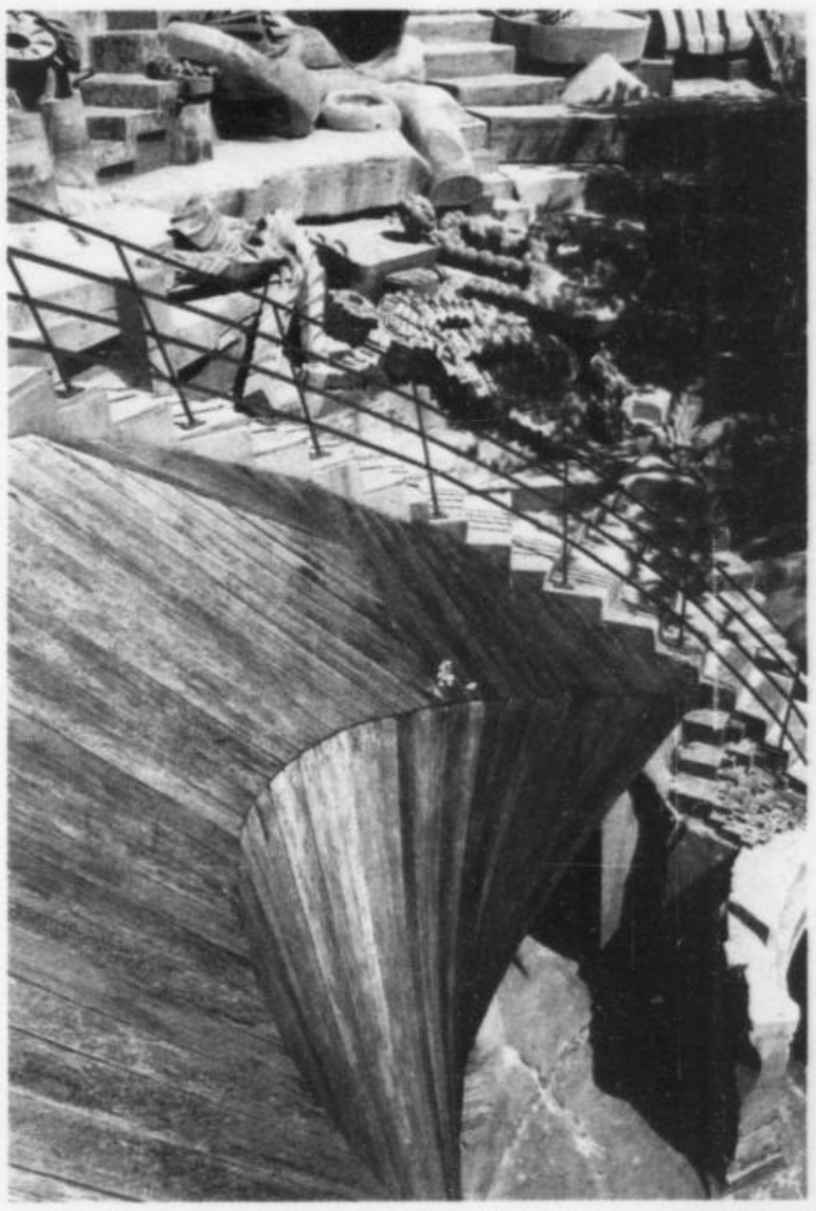
Sanctuaries and refuges

One of the most spectacular forms of this architectural tradition is sacred troglodytism. Underground temples, monasteries, burial vaults and catacombs hewn out of the rock constitute a vast heritage designed for worship or burial, showing how the human imagination regards rock as an impregnable form of shelter. To bury one's dead in a rock-tomb is to stake an eternal claim to that place.

The tomb-temples of Petra in Jordan, the Buddhist temple-monasteries of Ajanta and Ellora in India, the burial vaults of Lycia and the rock churches and hermitages of Cappadocia in Turkey are outstanding examples of troglodytic sanctuaries. Some of them, such as the rock churches of Lalibela in Ethiopia, are still used for worship. These forms of sacred architecture hewn from the living rock are highly sophisticated. Carving a sanctuary from the block, like sculpture, allows no room for error.

People who live in caves become invisible and inaccessible to the outside world, and cave-dwelling has been practised as a defensive ploy on every continent by individuals and communities. Many of the villages constructed by the Dogon people along the steep sandstone Bandiagara cliffs in Mali contain refuges in crannies in the rock to which the villagers could retreat when attacked. In the West of the United States are sites where fortified villages were built amidst a multitude of granaries and food-stores hewn out of the rock. People living in these villages clinging to canyon walls could cut themselves off from outsiders by removing the ladders that gave access to them. In Cappadocia, thousands of people could take refuge with stores of food and livestock in the extraordinary troglodyte settlements of Kaymakli and Derinkuyu.

There are large numbers of underground civilian and military fortifications in Europe, ranging from Roman and medieval refuges to the buried parts of twentieth-century defensive systems such as the Maginot Line. Poland, a land of plains which has been invaded many times, is particularly rich in fortifications which in many cases have an underground section as their main feature. Highly interesting specimens of underground architecture have also survived on old battlefields. During the First World War, the German army built a network of dugouts in old quarries on the Chemin des Dames in Champagne (France) and joined them by means of tunnels and railways. These underground installations



Above, *L'Hélice Terrestre*, a "contemporary art space" created in Anjou (France) by Jacques Warminski. Trowels and tea-spoons were among the tools used to excavate underground rooms from tufa. Above-ground sections of Warminski's work (right) were moulded in cement.

T. Gilou © Ask Images, Paris

HADES AND THE UNDERWORLD

HADES (the acronym of Histoire-Architecture-Découverte-Etude-Sauvegarde) is an international multidisciplinary research group for the study and promotion of the rock-hewn heritage. It is affiliated to the International Council on Monuments and Sites (ICOMOS).

We should like to contact people with specialist or non-specialist knowledge of the underground and rock-hewn heritage who may be interested in working with us. We are anxious to find out what is being done in this field throughout the world and to discover new sites. We should also like to assemble as much information on the subject as possible and create an internationally accessible data bank.

HADES would be pleased to hear from any person, institution or business interested in contributing to an original project on behalf of this unusual and little-known heritage.

Jacek Rewerski
President, HADES

equipped with electricity and telephone included barrack-rooms, refectories, hospitals and chapels. On most First World War battlefields, men stationed for long periods underground produced forms of art—graffiti, sculptures, poems carved on the walls—which are by no means negligible.

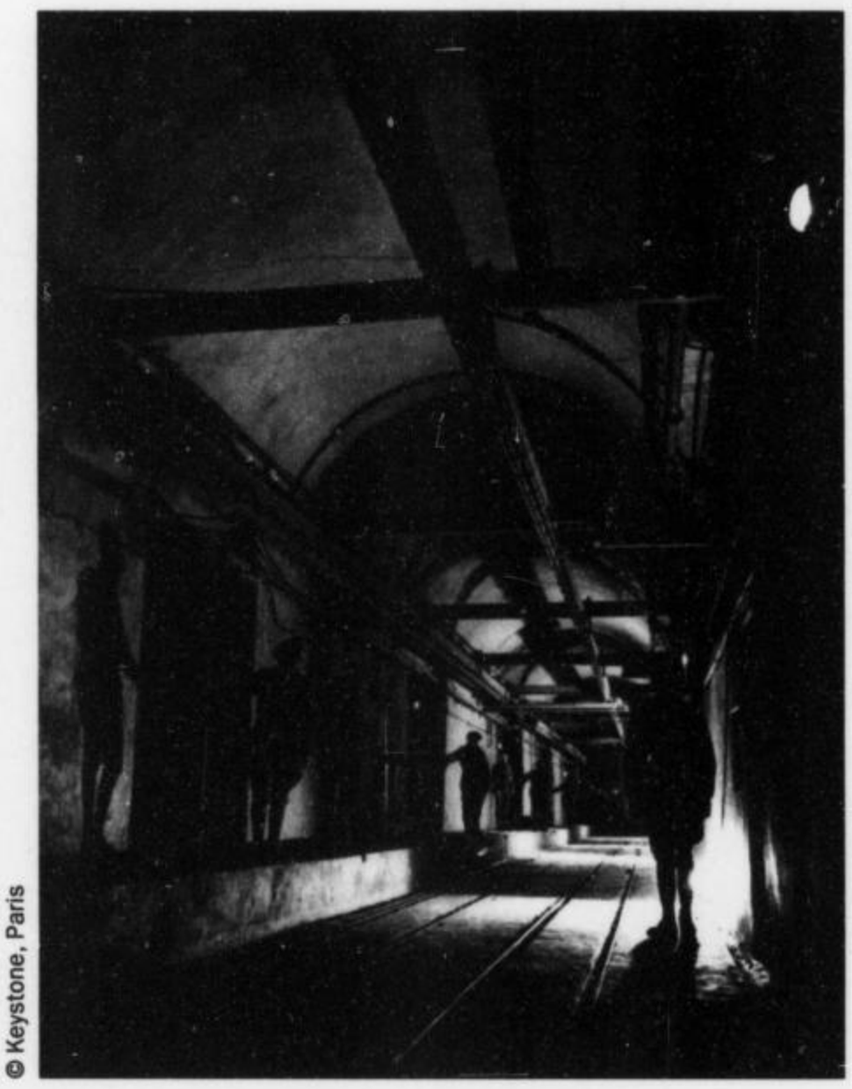
Architecture by subtraction

In spite of its wealth, diversity and beauty, the underground heritage does not enjoy the same prestige as that built on the surface. Improving its status is not easy. The conservation of so-called "natural" habitats is a new departure. We must try to understand how they blend into the environment and how to preserve them from erosion, the risk of which is increased by their fragility, which is caused by digging and is inherent in the very principle of this "subtractive" form of architecture. Conserving a cave dwelling is a totally different activity from conserving a building made of "dead" stone removed from its environment. A cave building lives, changes and ages with the earth of which it is a part.

This multi-faceted heritage—monumental, archaeological, ethnographic, urban, rural, industrial—illustrates to an exceptional degree the ways in which human settlement can blend with the environment. It is perfectly suited for inclusion in UNESCO's World Heritage policy, which takes into account both the cultural and natural dimensions of sites. Some major troglodytic sites registered on the World Heritage List (described elsewhere in this issue) are now strictly protected, but many others are still awaiting the necessary national and international recognition. They must be saved from ruin and from oblivion.

With the growing popularity of environmentalism more and more people are interested in getting "back to the earth". At the same time, infrastructures in towns and cities are increasingly being buried underground as a result of demographic pressure. Troglodytism is being rediscovered.

Will our children be the troglodytes of tomorrow? ■



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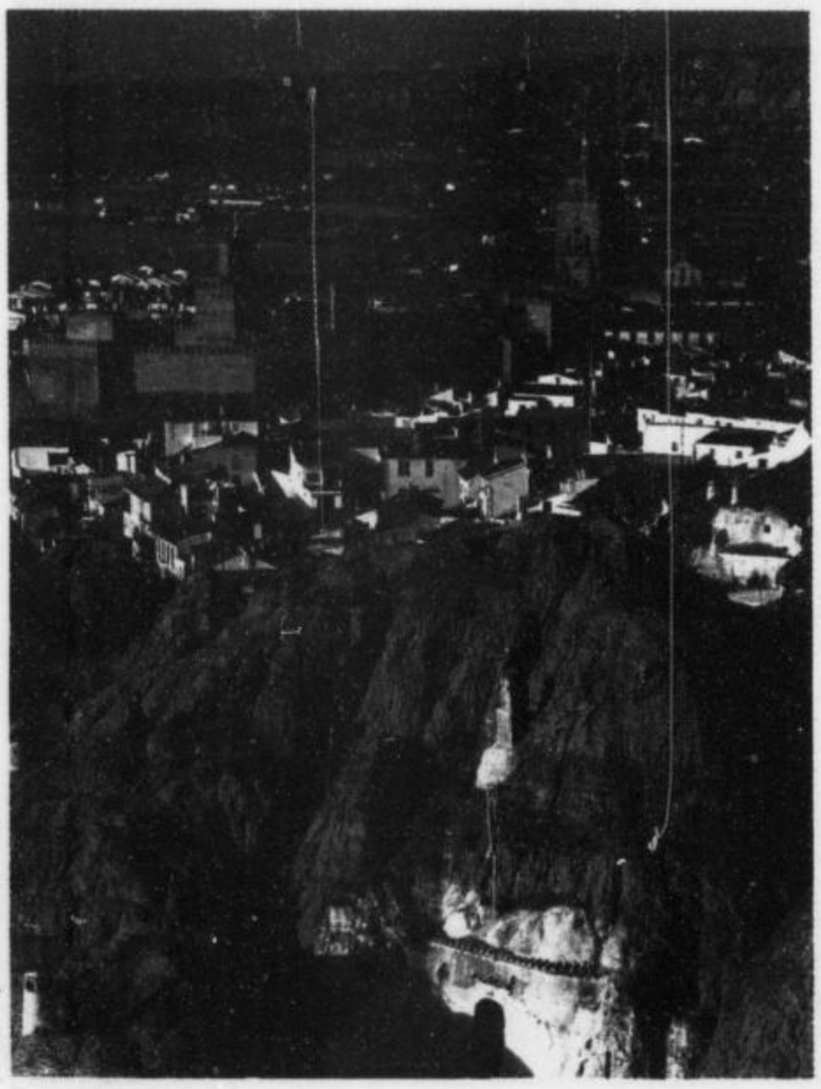
An underground gallery of munition storehouses in the Maginot Line, the celebrated French defensive fortification (1940).

Below left, *Las Cuevas* (the Caves) of Guadix in Andalusia (Spain).

Below right, Ostrog Monastery in Montenegro (former Republic of Yugoslavia).



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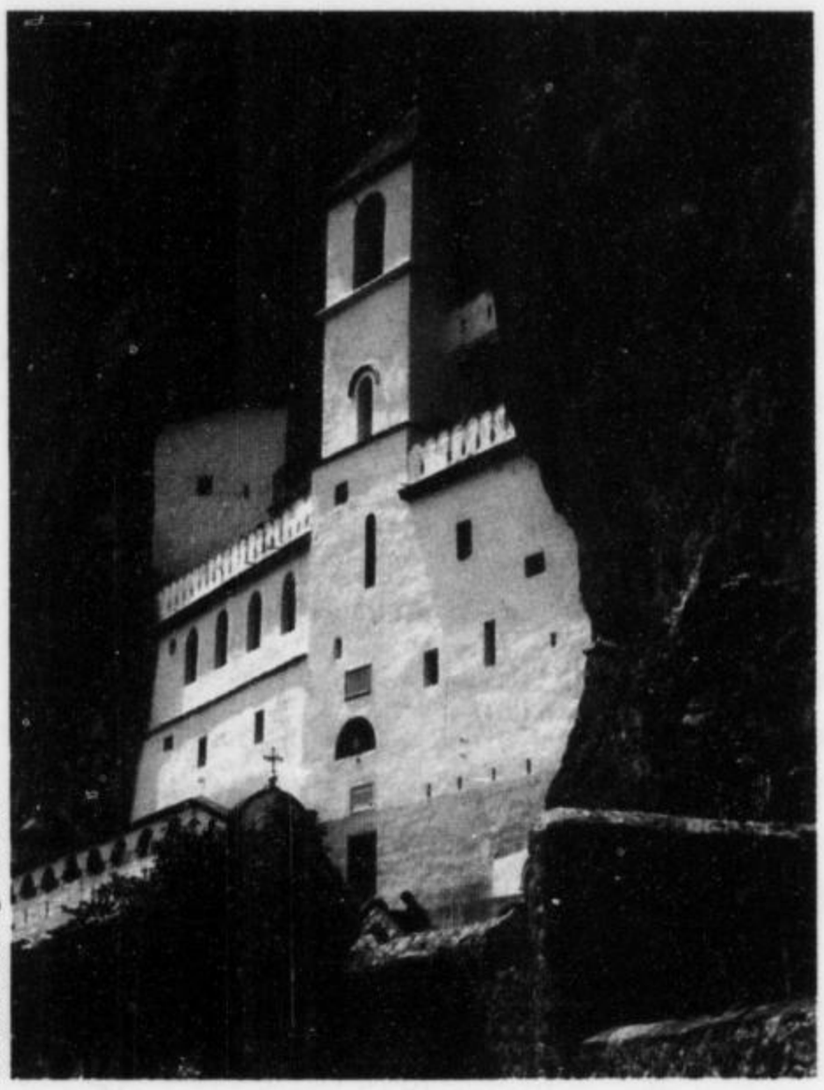

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JACEK REWERSKI,
of France, is a researcher and teacher at the French National Centre for Scientific Research (CNRS). A UNESCO consultant, he is president of the HADES research group (see box this page), which is associated with the International Council on Monuments and Sites (ICOMOS).

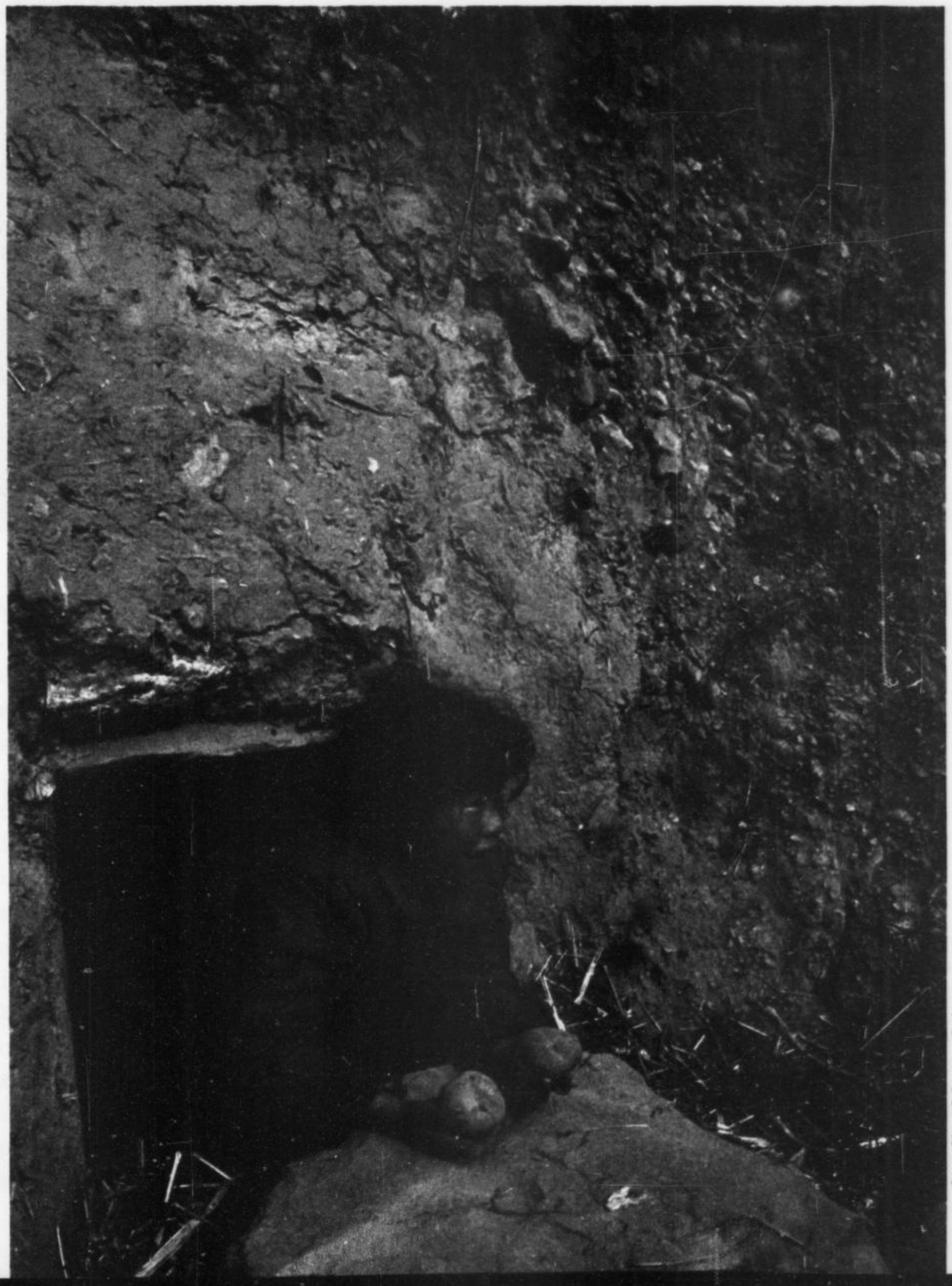
China: when loess means more

by Jean Paul Loubes

An original solution to the challenge of living in a semi-desert climate, the dug-out villages of the Yellow River offer many advantages to their inhabitants

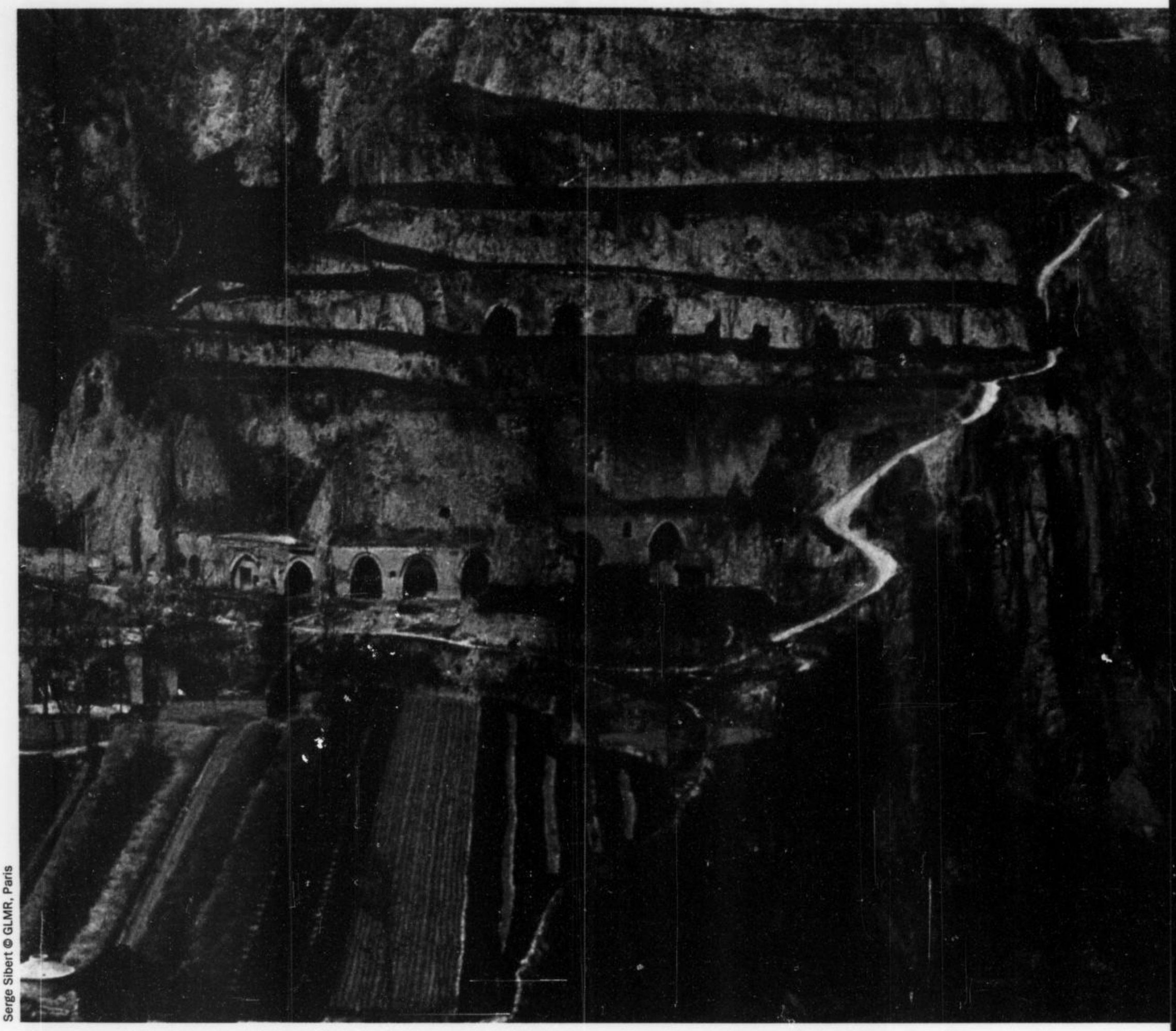
More than forty million Chinese still live underground, most of them in the Huang Ho (Yellow River) basin in the country's central provinces of Gansu, Henan, Shaanxi and Shanxi.

Climate, geography and geology have encouraged the development of this kind of architecture. With low rainfall and an aridity that increases the further one travels north-westward, the climate of these continental regions is subject to wide swings in temperature between night and day, summer and winter. The land has been extensively sculpted by the 4,800-kilometre-long river



Serge Sibert © Cosmos, Paris

A young cave dweller at Pinghu in Shanxi province.



Serge Sibert © GLMR, Paris

The village of Shang Hong Chi in Shanxi Province.

and its tributaries. Throughout its long history the giant Yellow River has left in its lower basin deposits of materials detached from the land in its upper reaches, deposits that have been shaped by its wandering course.

Geologically speaking, the middle basin of the Huang Ho forms the world's largest area of loess, a silt deposit made from an accumulation of dust carried by the wind during the ice ages. Highly consistent, the soil is easy to dig and, with sufficient irrigation (since it does not retain water), it can become fertile cropland.

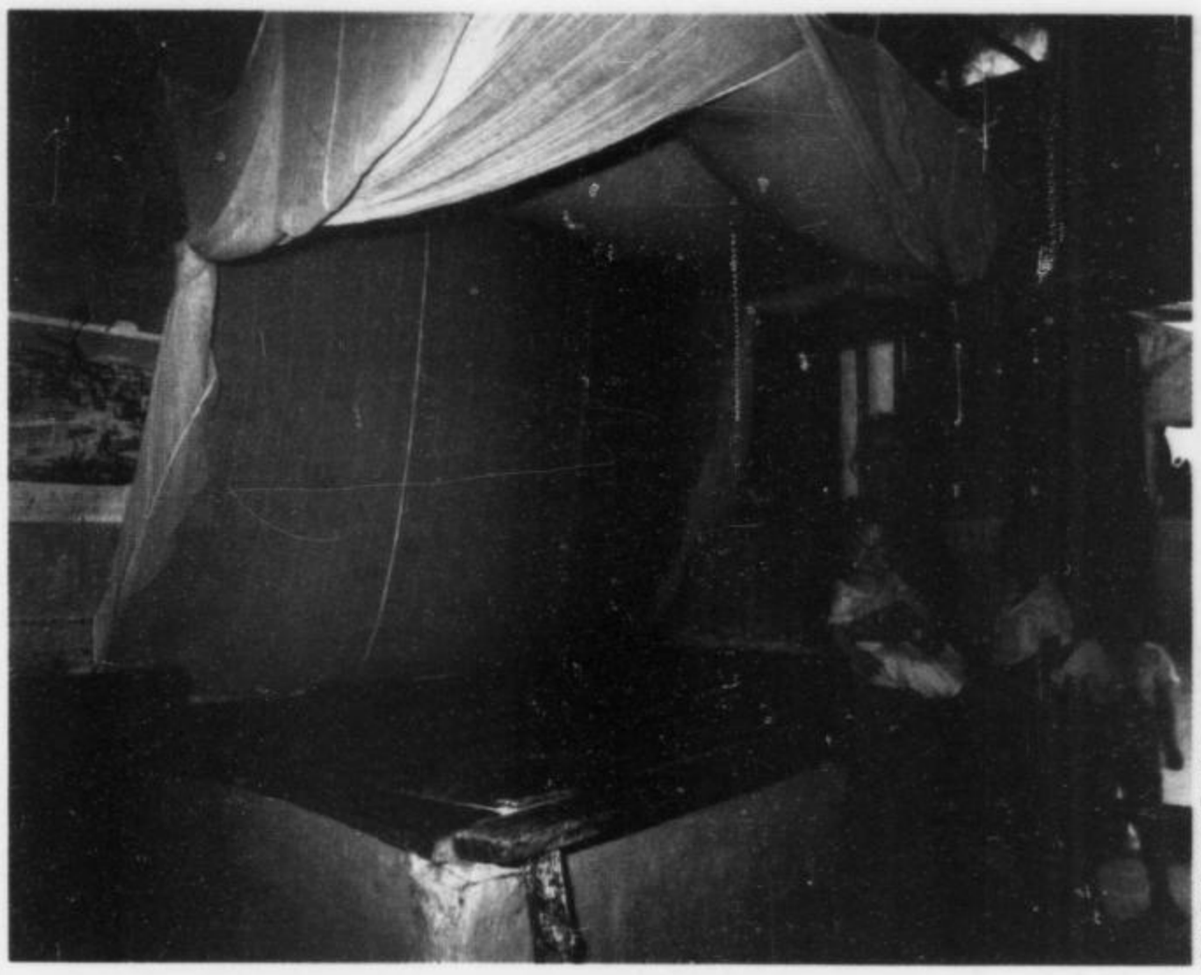
Such conditions have traditionally attracted human settlement, and these loess regions were the cradle of Chinese civilization in very ancient times. A variety of forms of cave dwelling developed here, confirming that troglodytism is an advanced form of architecture that has developed over time, just like surface building. All the different possibilities of cave design, vertical and horizontal, are found in the Yellow River region.

Wells of heaven

Here, on flat ground, entire villages consist of dwellings built around vertical shafts. The layout of the dwellings follows rigorous principles. A shaft approximately fifteen metres square is dug vertically into the ground to form a courtyard. This area, around which the different rooms are built, is the equivalent of the central courtyard known as the "well of heaven" which is a feature of the traditional dwellings of northern China. It is usually six metres deep, which explains why the tem-

JEAN PAUL LOUBES,
of France, is a teacher at the Architecture School of Bordeaux. His published works include a study on troglodytic dwellings in China entitled *Maisons creusées du Fleuve Jaune, L'Architecture troglodytique en Chine du Nord* (Paris, Créaphis, 1989).

The bed-stove (*kang*) of rammed earth inside a shaft dwelling in China's Shaanxi Province.



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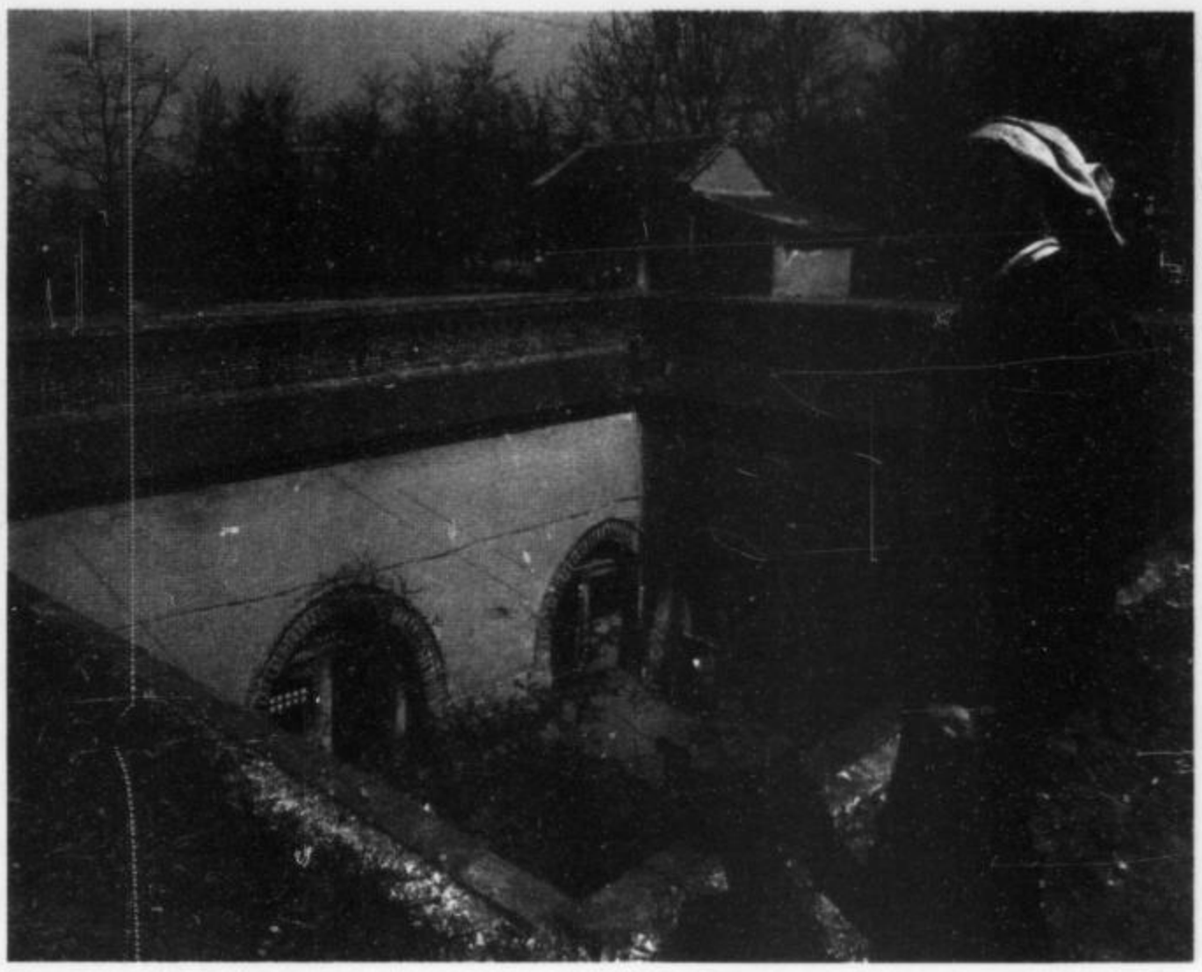
Looking down onto the courtyard of a loess shaft dwelling in Shanxi Province (China).



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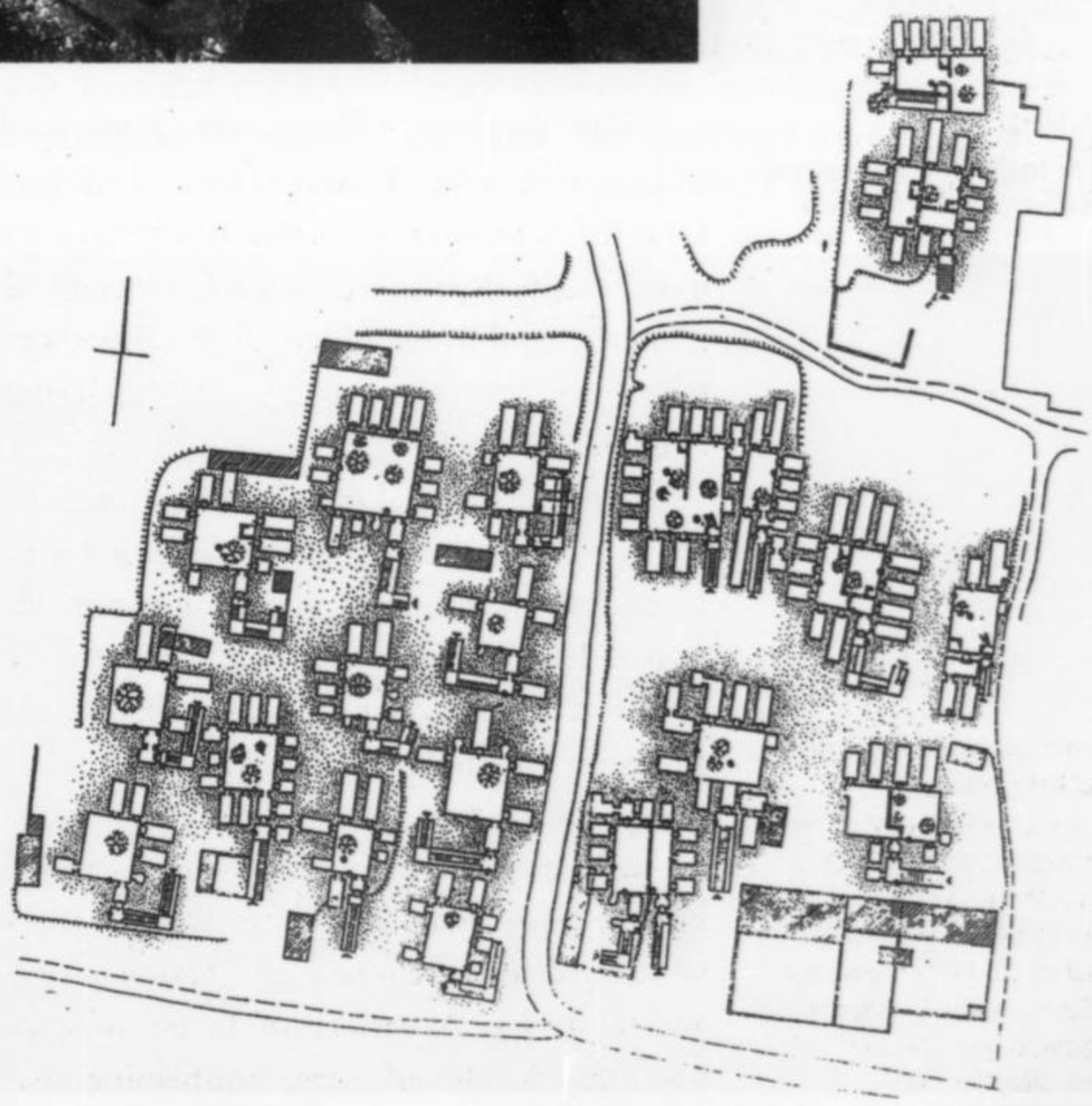
Plan of a Chinese loess village. This form of settlement permits a high density of population while maintaining a clear distinction between public and private areas.



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perature is stable and why each shaft is sound-proofed from the next. Rooms are dug sideways into walls facing south, east and west. Each wall contains two or three rounded or pointed arches. The north-facing side of the shaft is taken up by entrances and sometimes a storage chamber.

The main rooms—bedrooms, the room for the ancestors' altar and the living room—are dug into the south-facing side. As in the traditional Chinese house, each one is equipped with a *kang*, a stove under a rammed earth bed. The screen-wall, or *yingbi*, of the dwelling is another feature that is also found in houses built above ground. It stands in the courtyard facing the entrance, and its main purpose is to prevent evil spirits, which move in straight lines, from entering

Serge Sibert © GLMR, Paris

Abandoned dwellings in Gao Gun village (Shaanxi Province). A cave serves on average three generations.

the house. Screen walls are about two metres high, and are made of rammed earth, adobe or fired brick, topped with tiles. In the middle of each wall is a small niche containing a divinity.

Each house is reached by a sloping path made of rammed earth, in some cases shaped into a staircase with a smooth ramp beside it. When the slope is particularly steep the ramp may tunnel through grain stores, tool sheds, or sometimes even a well. In some cases the site of the dwelling is indicated on the surface by a built entrance marking the beginning of the ramp. Once again, the design of these entrances is the same as that found in traditional houses built on the surface.

The dug-out villages are remarkable examples of a form of housing design that combines the heating advantages of underground conditions and the climate outside. The central shaft is the key structural factor. It organizes and defines the living area and lets in light and warmth from the sun. With dwellings located beneath the soil and fields at ground level, the land is used twice over.

In these villages private and public space is divided into two levels with just a few metres between them. At any point in this urban fabric the two levels communicate. This original system combines two qualities that do not usually coexist in traditional housing: the dwelling is extremely isolated and yet the public space and the social life that goes with it are just above the doorstep.

Dug-outs and built-up areas

Caves hewn from the hillside are especially well adapted to the hilly country of Henan, Gansu and Shaanxi provinces, making skilful use of the topography and the resources of indigenous architecture.

Caves are dug laterally into loess cliffs. This is the most widely used technique because it is the most straightforward way of attacking a hillside facing south or southwest. The rubble is generally used to make a flat area in front of the entrance to the dwelling, which eventually becomes the courtyard. Packed-down loess is an extremely homogeneous material and enables symmetrically shaped arches—pointed, rounded or otherwise—to be made.

The extensive Chinese heritage of dug-out dwellings ranges from the simplest four-by-six-metre rooms to layouts of extreme intricacy. In addition to the rooms dug out of the hillside, the courtyard may be used as a site for constructed houses, for troglodytic dwellings are often combined with other forms of architecture. Some highly elaborate troglodytic dwellings are built on terraces on different levels and consist of a complex of buildings and artificial caves. These caves have the same shape as excavated vaults but are made of stone masonry. Entirely made by human agency, they have all the advantages of natural caves, especially their constant temperature. Their thick walls and massive earth roofing provide a mild and stable temperature.

This blend of excavation and surface building is typical of Chinese architecture. ■

The troglodytic University of Yan'an, Shaanxi Province.

Serge Sibert © Cosmos, Paris

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Italy: rocks in a hard place

by Pietro Laureano

During its chequered history the ancient rock-hewn town of Matera withstood many waves of invaders. The pressures of 20th-century life proved harder to cope with....

Pierced into the soft limestone cliffside of a deep ravine in the high hills of southern Italy is a complex of troglodyte dwellings that has existed for thousands of years. Known as the Sassi (rocks) of Matera, it bears traces of human activity dating from as far back as the Old Stone Age, although it was not until neolithic times that the site began to be occupied. At that time the high plateaux of the Basilicata region in which Matera is situated were inhabited by semi-nomadic tribes who found the *gravinas* or deep canyons etched into the limestone hills ideal places in which to halt during their seasonal wanderings in search of grazing land.

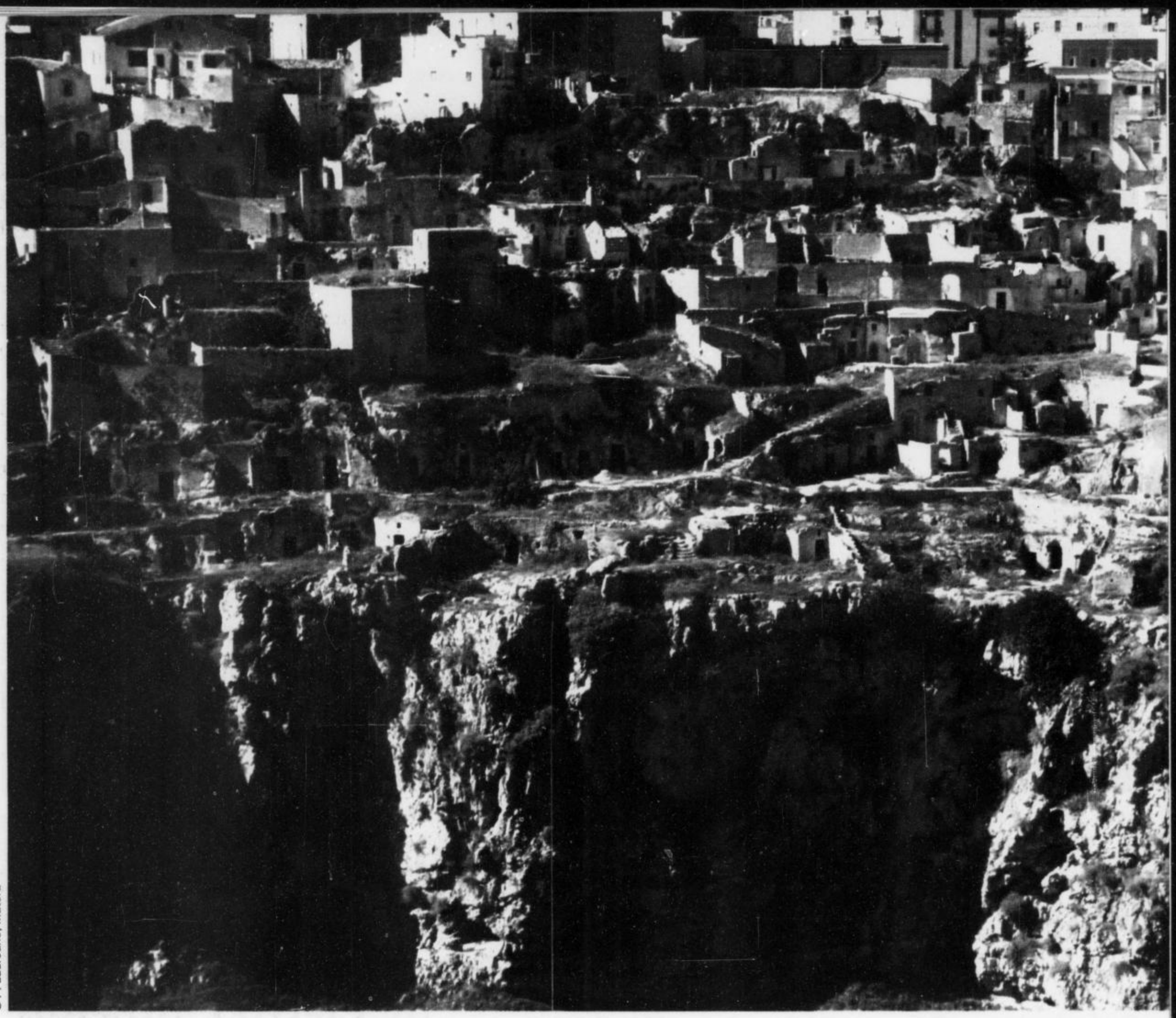
Stones and time

When man began to use metal tools, it became easier to dig into the soft stone. Tombs and underground ritual chambers with central pillars left after the excavation of rocky rubble, date from this period. The first scattered rock dwellings were hewn around water reservoirs. Water became an object of worship, for it is rare in this region of scorching summers and icy winters, where annual rainfall amounts to no more than 500 millimetres.

In time these early human settlements began to coalesce into urban centres.

The rugged topography of the region, with its inaccessible rocks and hidden valleys, enabled its inhabitants to withstand many waves of invaders down through the centuries. The Greeks in the eighth century B.C. were followed by the Romans (fourth and third centuries B.C.), the Byzantines (fifth century A.D.), the Lombards (sixth and seventh centuries), the Saracens (ninth century), the Normans (eleventh century), the Slavs and the Hungarians (eleventh century) and finally the Aragonese (fifteenth century). The

Above, Matera's chapel of Santa Lucia alle Malve.



©P. Laureano, Matera

The dwellings of Matera hug the rock face.

aridity of the land helped to strengthen its people's spirit of independence, and ancient traditions continued to be observed even as they were renewed and invigorated by newcomers.

The region's ancient agricultural and pastoral culture provided favourable conditions for medieval monasticism. Hundreds of churches, chapels, crypts and rock-hewn cathedrals adorned with frescoes were hollowed out in Matera. More than monasteries, caves and caverns became retreats and refuges for religious bodies which engaged in experimental attempts to create ideal communities and supported and promoted local agriculture and the local economy.

Medicinal plants were harvested on the high plateaux, which were rich in aromatic shrubs. The caves, where saltpetre, lichens and moulds could be found, were converted into storage rooms and laboratories where miraculous elixirs were produced. According to one sixteenth-century chronicler, a substance found in Matera called *bolo* (an ochreous clay formed by dissolution of the limestone) was even dubbed "holy earth" at the court of the Medicis where it was observed to have healing properties and to be an antidote to poison.

An object-lesson in ecological management

The organization of life in the Sassi was determined by five factors: the scarcity of resources, the need to use them collectively, the interplay between soil and water, and knowledge of the laws of mechanics and fluids.

Blending perfectly into its natural setting, the town of Matera climbs vertically up the steep sides of its *gravina*, the location and distribution of its dwellings determined by the rocky layers laid bare by the canyon. Two natural amphitheatres formed by two gullies known as *grabiglioni* ("small crevasses") were subjected to intensive excavation and terracing. The dispersal and collection of

Vertical cross-section of the troglodyte settlement. ▶

Tiered terraces are used for water collection and storage. ▶

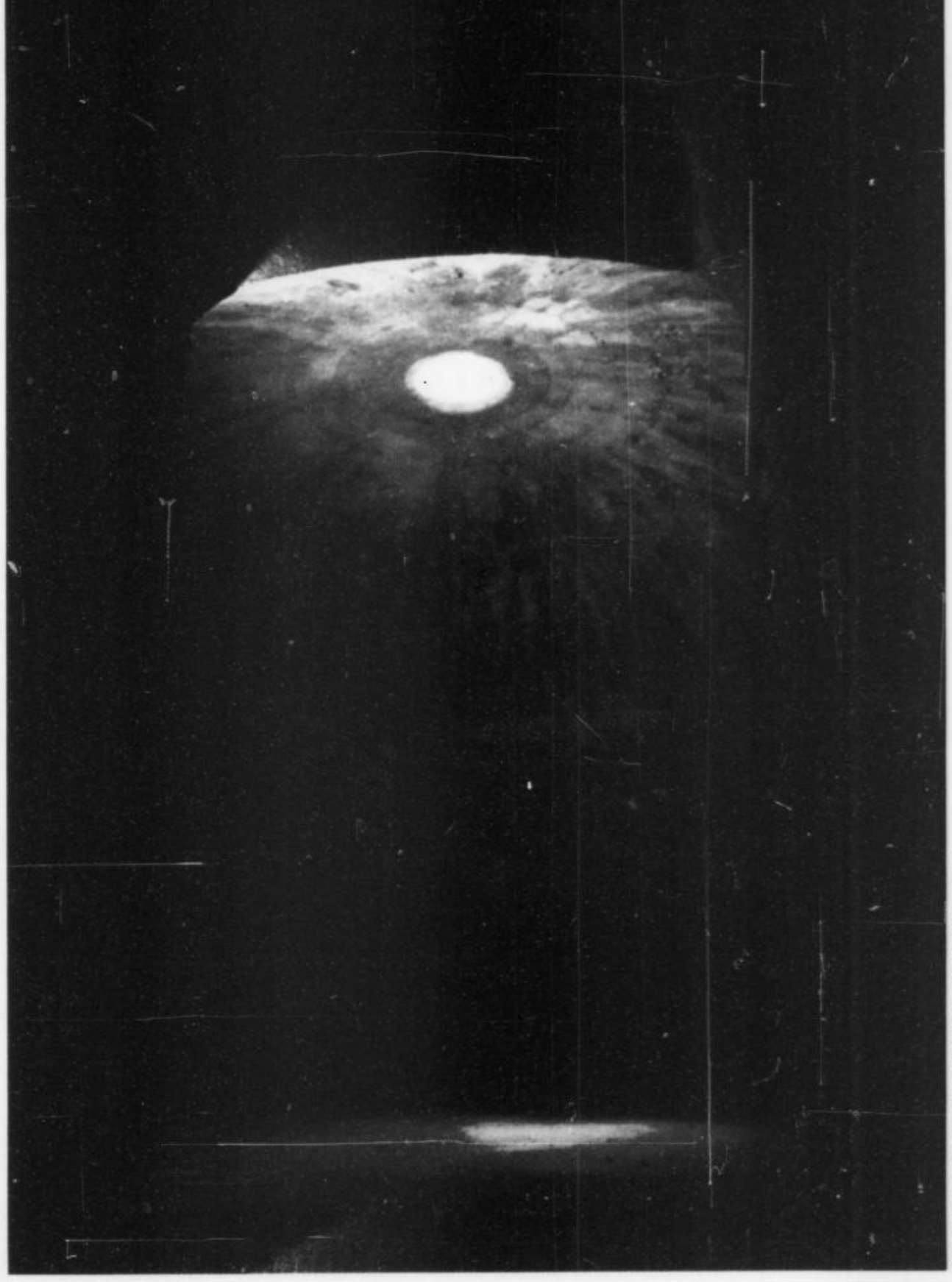
water runoff via a network of channels, cisterns and caves protected the slopes against the destructive effects of erosion and preserved the stability of the terrain.

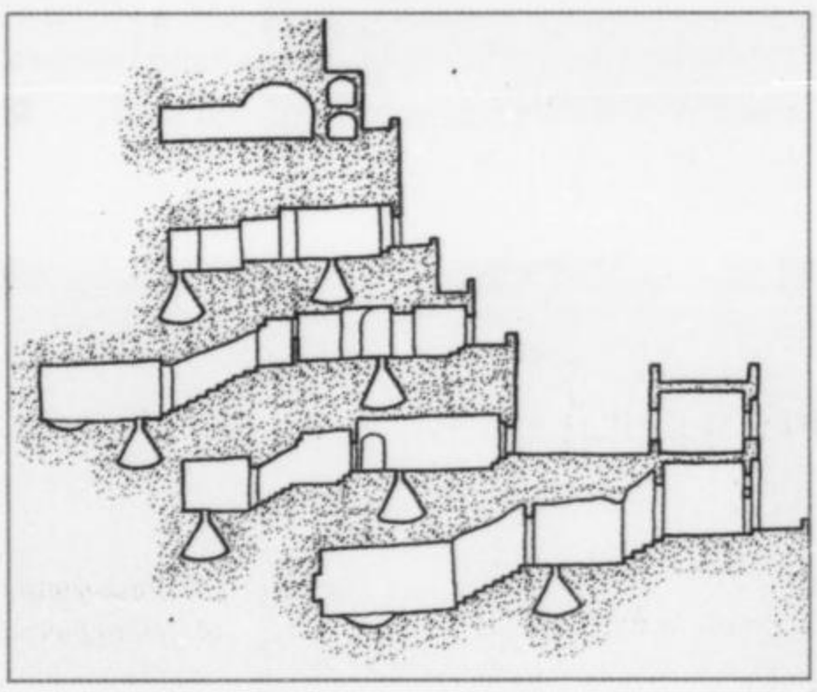
When it rains, water runs helter-skelter over the clay surface of the high plateau, creating ponds and marshes. During dry periods, the clay cracks and springs dry up. On the plateau and slopes, which are rich in red, fertile soil (*bolo*), were woods and fields. The dwellings with their deep subterranean chambers were built lower down along the *grabiglioni*, blending in with the rocky cliff face. Grouped into units, they open out onto terraces and hanging gardens. Each unit forms a *vicinato* (neighbourhood), a remarkable example of community organization.

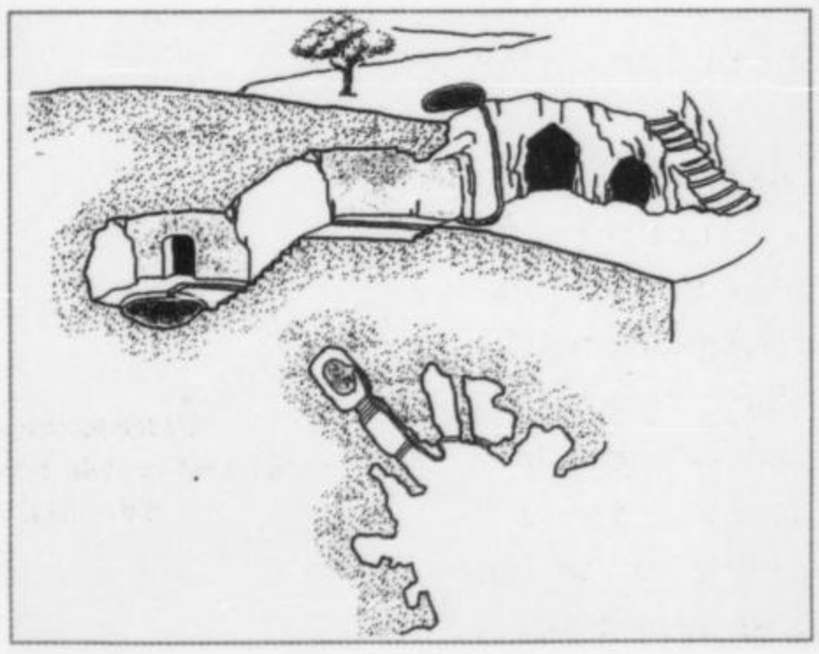
The dominant architectural forms are cave-like. The basic element (the *lamione*) is a single barrel-vaulted room which may be the nucleus of a large structural complex. The terrace outside can be used as a communal courtyard, and beneath it is a communal cistern used for storing water that runs off roofs carefully designed for this purpose. Stairways serving as vertical axes of communication follow the course of diagonal water run-off channels. The horizontal drainage system, used to channel water into the terraced gardens and to fill cisterns deep inside the caves, provides a framework for paths leading to the *vicinati*.

The vertical development of the city in medieval times integrated earlier constructions, used the law of gravity to facilitate water distribution and afforded protection against the wind. Two districts, known as Sasso Caveoso and Sasso Barisano, grew up around the two *grabiglioni*, which provided humus-rich land for cultivation. In the centre was a fortified area, the *civita*. Craftsmen's workshops and shops were built on the edge of the high plateau, where the large cisterns and rock-hewn grain storage silos were located.

Inside a tower lit by an oculus (late 15th century).







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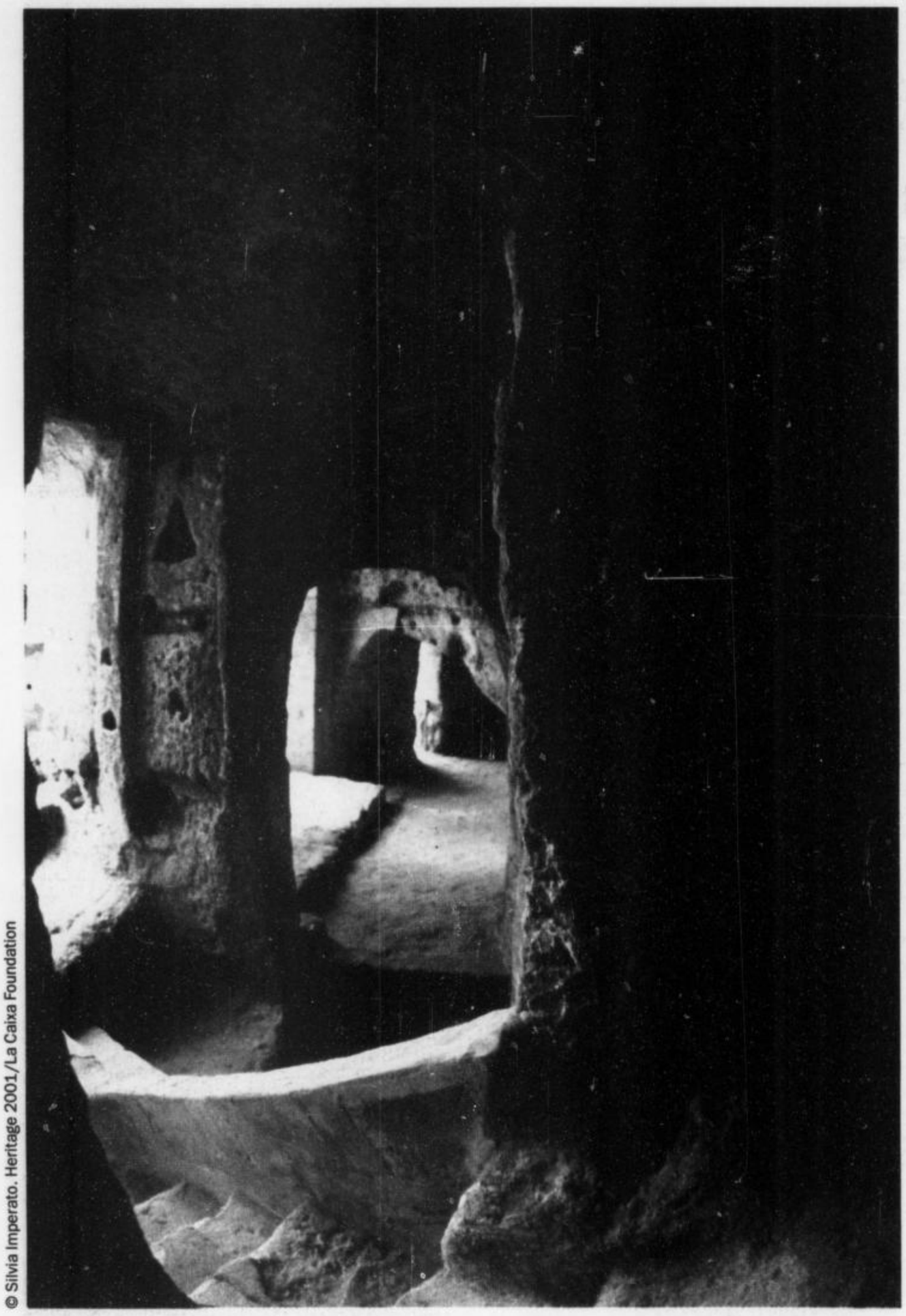

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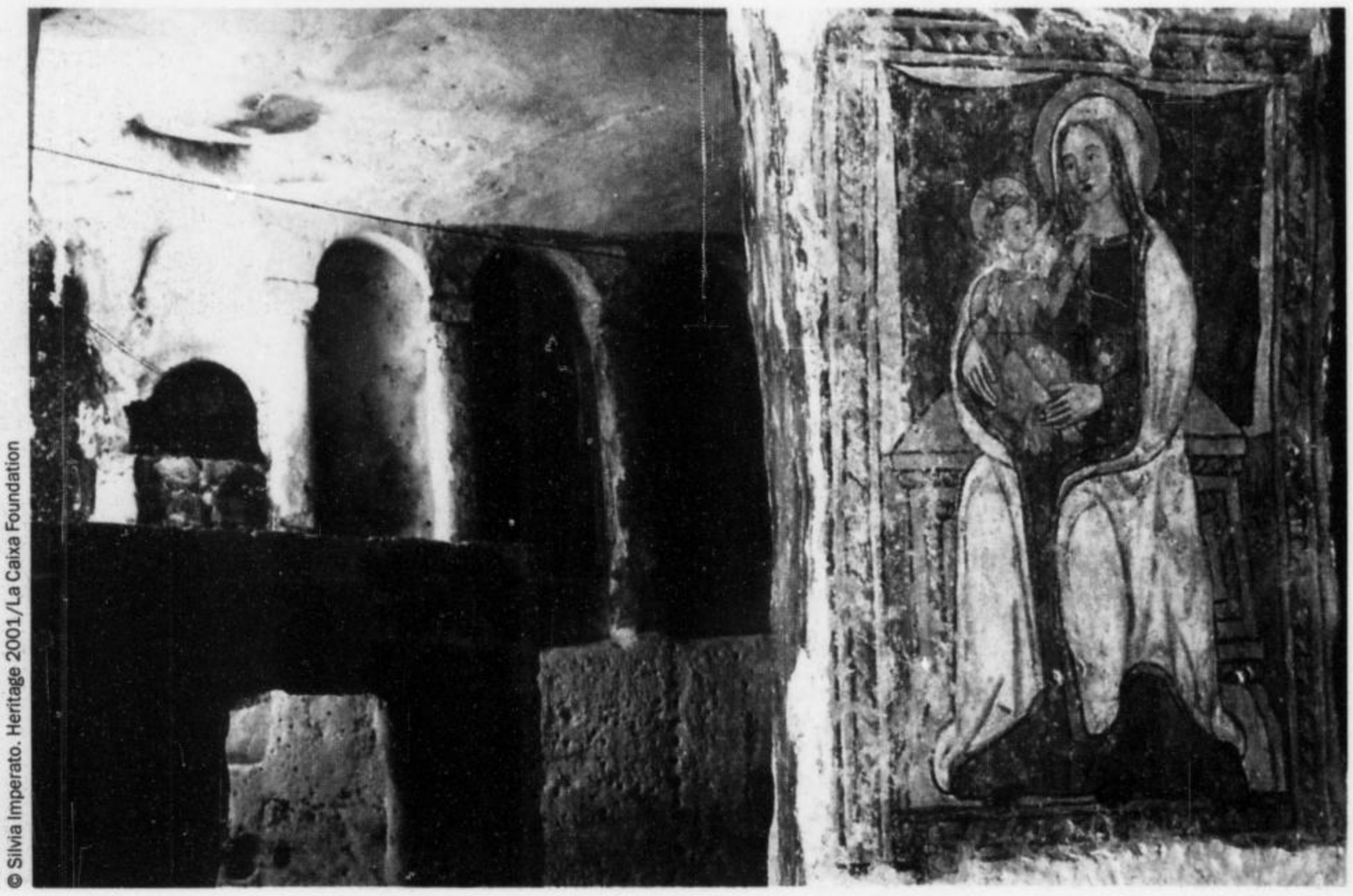
Upsetting the balance

This complex and harmonious urban system, based on the drainage, control and distribution of water, survived intact until the eighteenth century. Then, in the nineteenth and especially the twentieth centuries, the ability to manage environmental resources in a spirit of community died out. The modern city of Matera extends above the run-off slopes to places where the builders of the old city never dared to venture. The filling in of drainage areas for use as roads and the destruction of the capillary network of water collection brought to an end time-honoured constraints that had to be observed in order to strike a balance between urban development and scarce natural resources. The urban network became denser and reached saturation point. As the dwellings became increasingly tightly packed, the system whereby life in them was organized began to break down.

Deteriorating hygienic and environmental conditions in the 1950s led to a decision to transfer the population of the old town to new quarters. When the evacuation project from the Sassi began, 15,000 people—two-thirds of Matera's population at the time—were living in 2,997 dwellings, 1,641 of which were considered to be troglodytic. Since then the caves have remained virtually empty, but for visitors they document a unique architectonic experience, the creation over centuries of a remarkable urban area where people managed natural resources with great economy and skill. ■

Above, the interior of the church of San Nicola dei Greci (12th century).

Right: Madonna and Child, a 12th-century fresco in the chapel of Santa Lucia alle Malve.



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PIETRO LAUREANO,
an Italian architect and town planner, is the author of *Sahara, giardino sconosciuto* ("The Sahara, an Unknown Garden", published by Giunti, Florence, in 1988).

50 years ago...

Commemorating the end of the Second World War (1939-1945)

The storm clouds began to gather in the 1930s with the rise to power of totalitarian and expansionist regimes in Japan, Germany and Italy...

IN ASIA

1932: Japan invades Chinese Manchuria, which is proclaimed a Japanese protectorate.
© Viollet Collection, Paris

1937: Japan invades China. Here, a Japanese column on the road to Beijing.
© Lapi-Viollet, Paris

Chinese Communist leader Mao Zedong (Mao Tse Tung) proclaims "the need to throw the masses into the war" against Japan.
© Viollet Collection, Paris

1939: Japan invades the Chinese island of Hainan.
© L'Illustration/Sygma, Paris

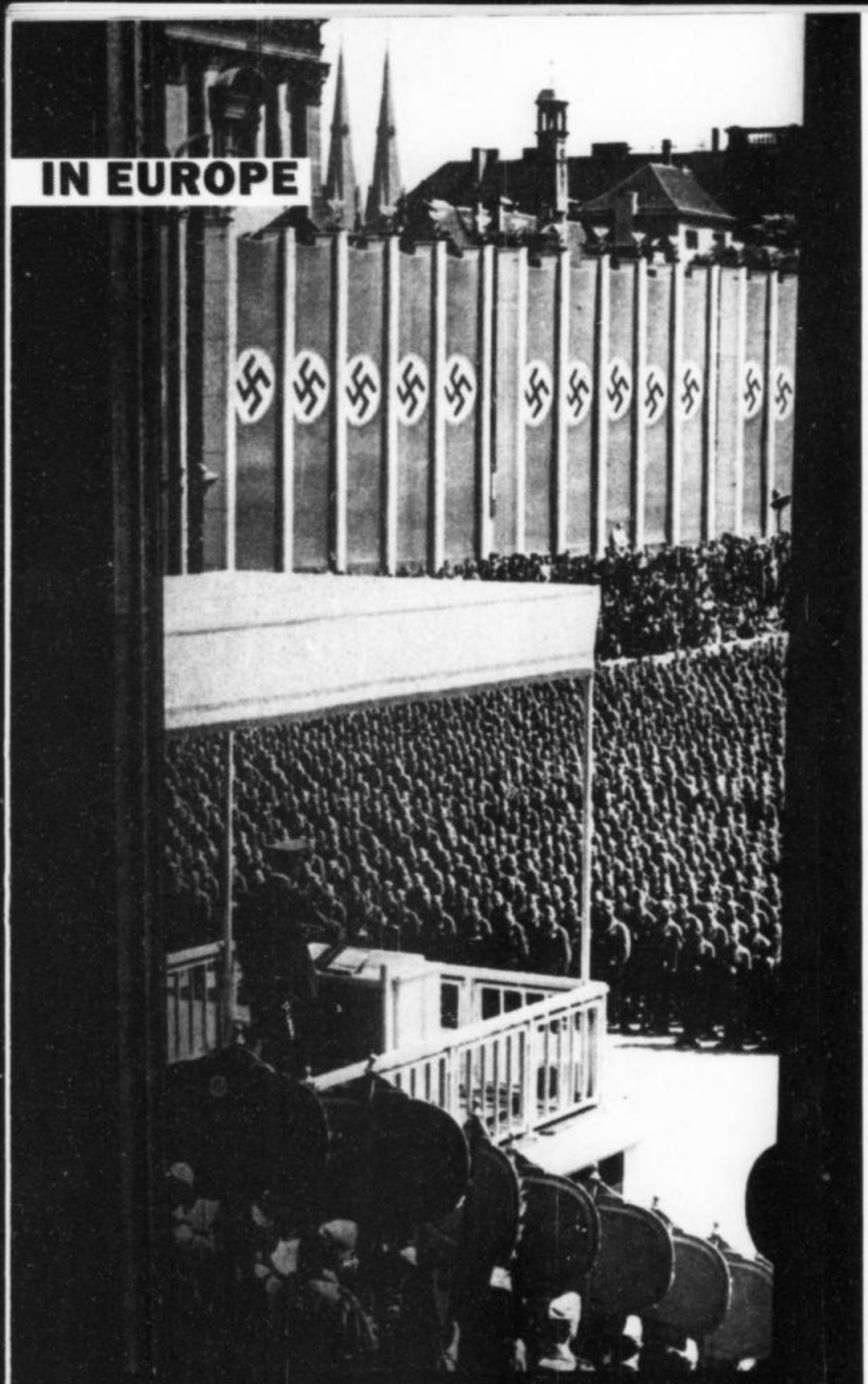
IN EUROPE

France and Britain attempt to appease Hitler. Here, Chamberlain, Daladier, Hitler and Mussolini meet to sign the Munich agreement in 1938.
© Archiv für Kunst und Geschichte, Berlin

1939: Hitler invades Czechoslovakia
© L'Illustration/Sygma, Paris

1939: Hitler's ally, Mussolini, invades Albania.
© L'Illustration/Sygma, Paris

IN EUROPE



1939: Hitler welcomes home German "volunteers" who had helped Franco to victory in the Spanish Civil War.
© L'Illustration/Sygma, Paris

1939: The Nazi-Soviet non-aggression pact brings Hitler the temporary neutrality of Stalin and an agreement to carve up Poland. Here, the Foreign Ministers of the Soviet Union and Germany, Molotov (seated) and Ribbentrop (standing behind him) sign the Pact.
© P.P.P./Gamma, Paris

1 September 1939: German troops attack Poland and bomb Warsaw. 3 September: France and Britain declare war on Germany.
© L'Illustration/Sygma, Paris

1940

27 September: Signature in Berlin of the Tripartite Pact whereby Germany and Italy seek to impose a new order in Europe, and Japan undertakes to do likewise in the Far East.
© Collection Lapi-Viollet, Paris

An Italian offensive against Egypt, where a British garrison was stationed to protect the Suez Canal.
© L'Illustration/Sygma, Paris

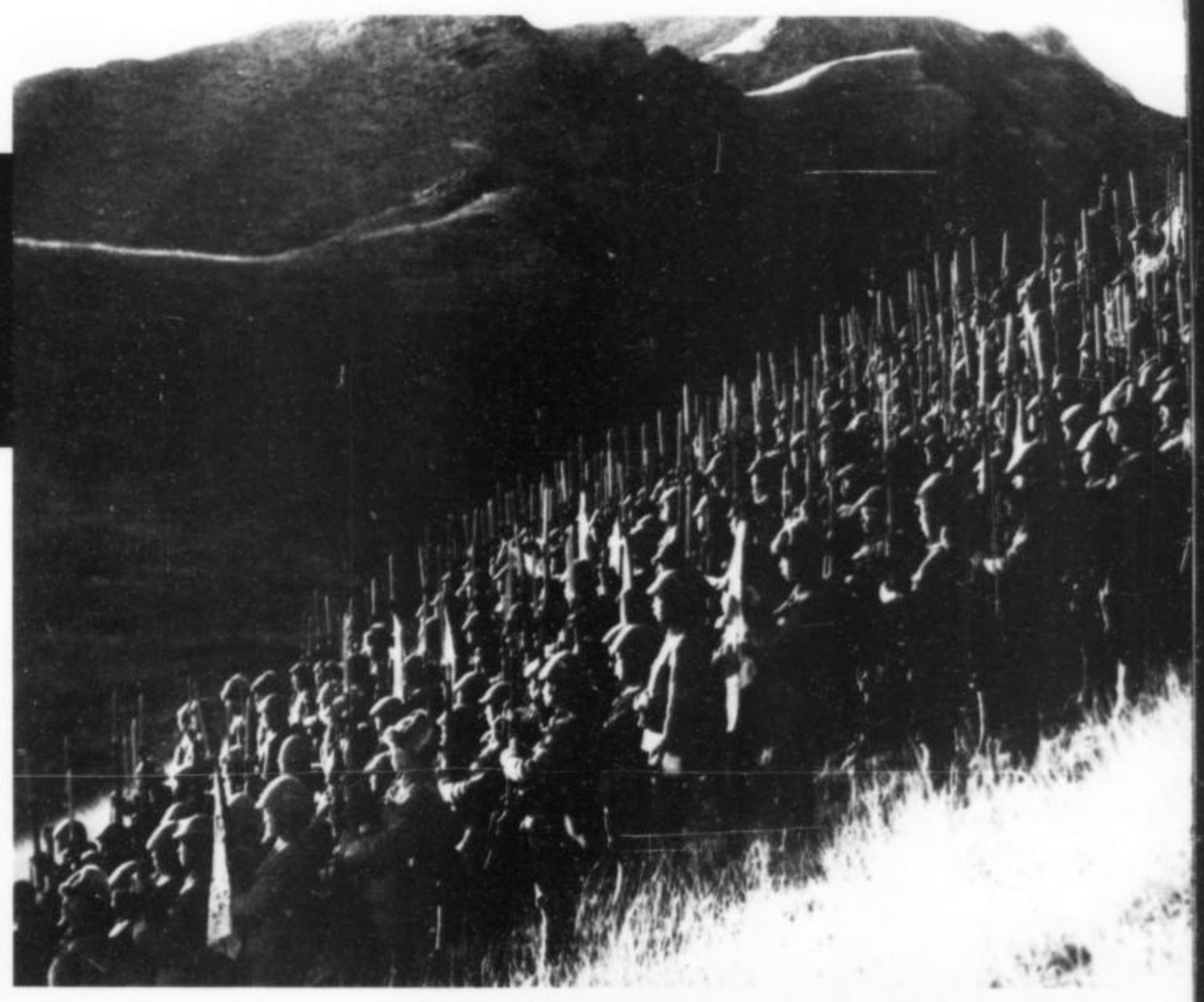
1941

After being trapped for several days on the beaches of Dunkirk (left) by the German army, large numbers of the British Expeditionary Force and other Allied troops are evacuated to Britain. But the French army is rapidly overwhelmed. Marshal Pétain comes to power in France and signs an armistice with Hitler.
© Guy Vattier/Gamma, Paris

18 June: General de Gaulle, speaking from the BBC studios in London, appeals to the French to reject the armistice and to continue the struggle. This marks the start of the Free French movement.
© Keystone, Paris

London during the blitz.
© Keystone, Paris

Japanese soldiers in China face East and present arms as a token of respect to their Emperor.
© L'Illustration/Sygma, Paris



Aboard a warship off the coast of Newfoundland, Roosevelt and Churchill sign the Atlantic Charter, setting forth principles which inspired the Charter of the United Nations.
© Keystone, Paris

Hitler breaks his pact with Stalin. German forces invade the Soviet Union.
© L'Illustration/Sygma, Paris

Japanese aircraft stage a surprise attack on Pearl Harbor, America's main naval base in the Pacific, bringing the United States into the war.
© L'Illustration/Sygma, Paris

1942

THE BATTLE OF STALINGRAD

(September 1942-February 1943).

Hitler committed a million men, 5,000 tanks and 3,000 aircraft to the battle. Photo shows bombing of one of the city's stations.

Below: German soldiers fighting in the streets of Stalingrad. The heroic Russian resistance and the German surrender were the decisive turning point in the war in Europe.

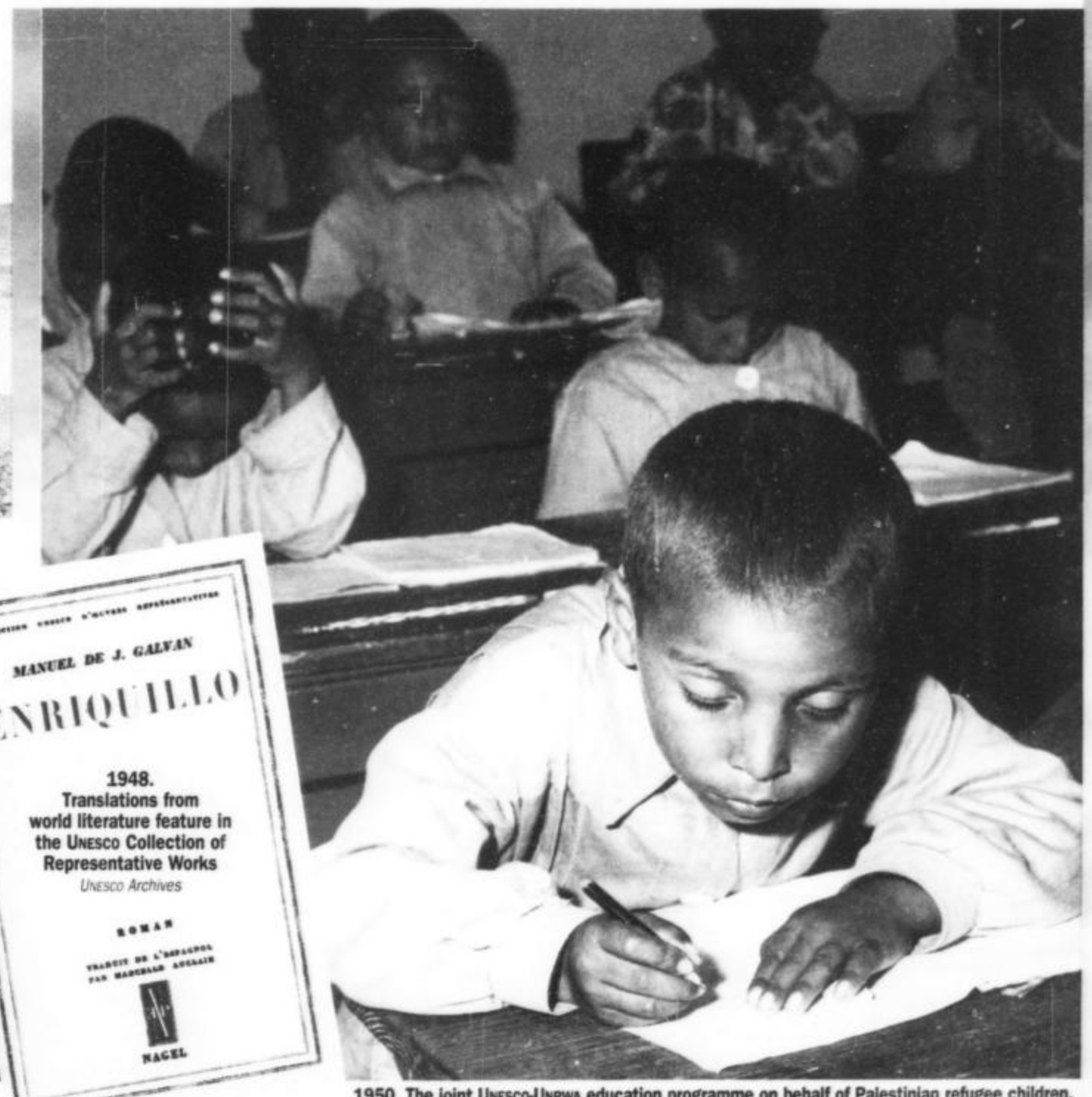
Photos © L'Illustration/Sygma, Paris

50 years of UNESCO

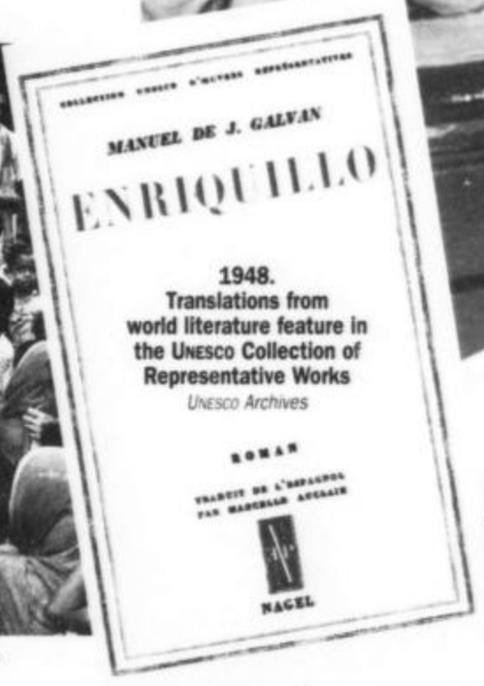
20 November 1946. The first General Conference opens at the Sorbonne in Paris. *Unesco/Eclair mondial*

the early years

1951. The arid zone research programme. *Unesco/G. Bohm*



1956. Radio Forum pilot project for literacy and development in India.
Unesco/J. Bhownagary



1950. The joint Unesco-Unrwa education programme on behalf of Palestinian refugee children.
Unesco/D. Roger

THE UNESCO COURIER
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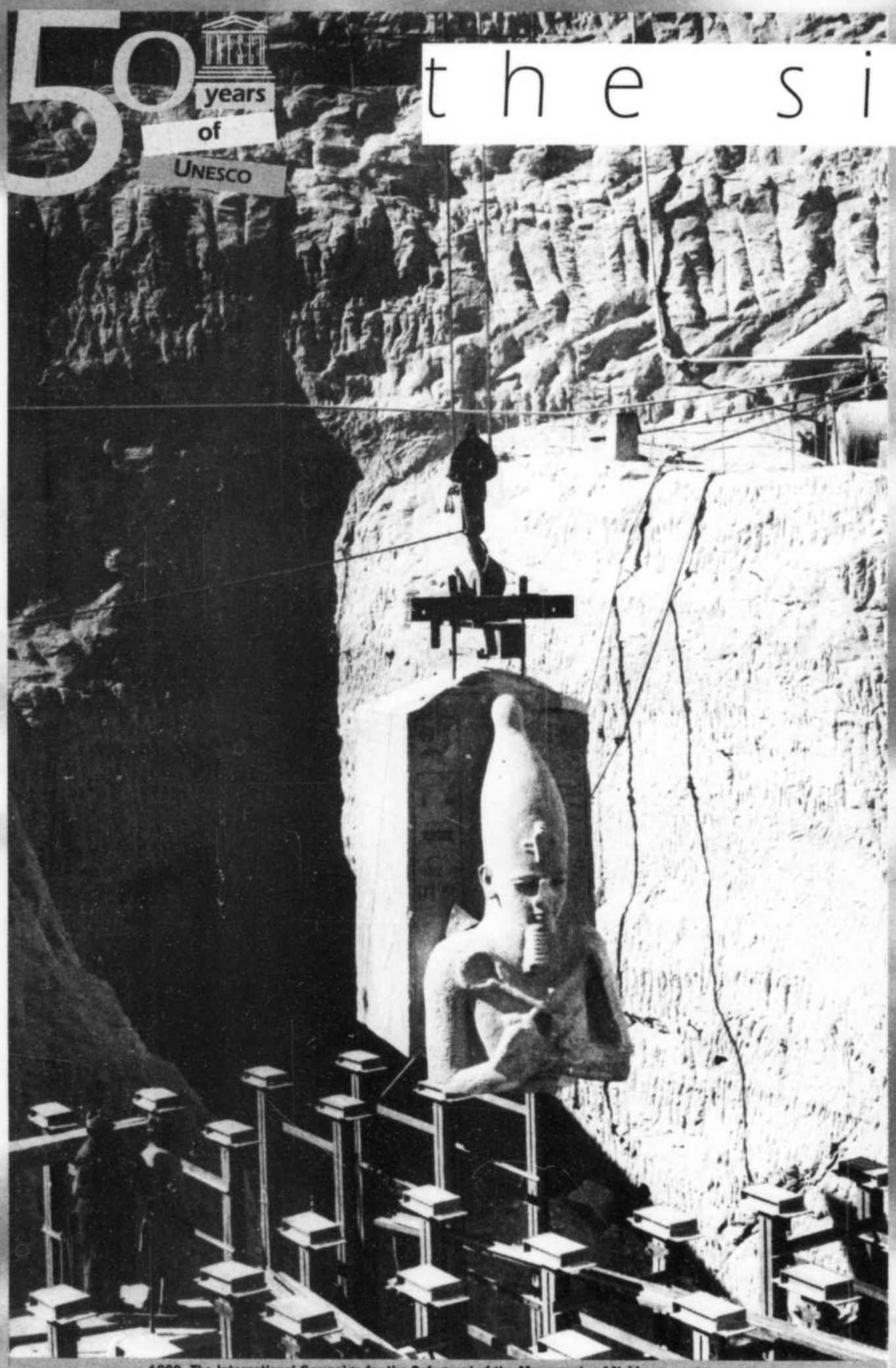
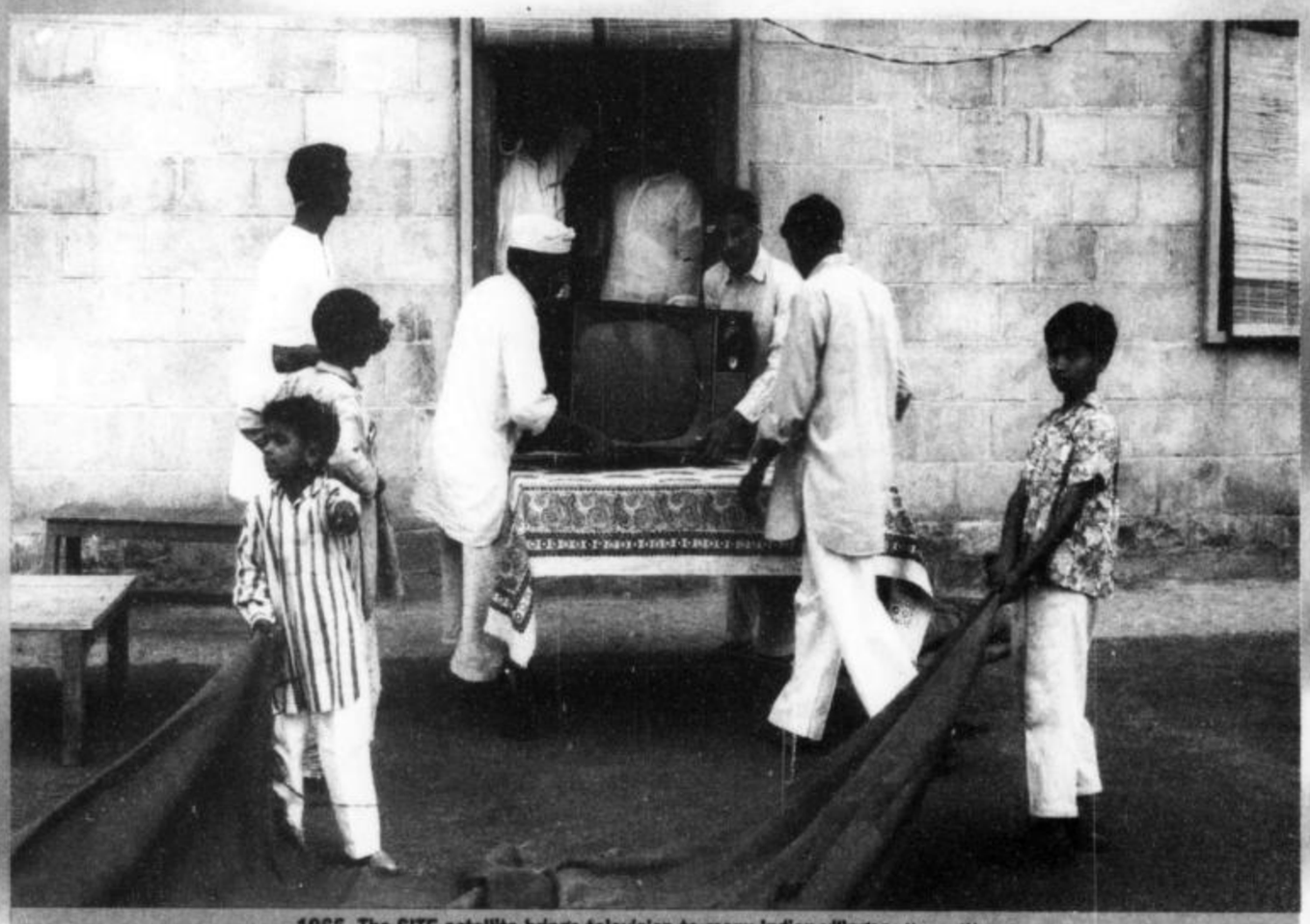
the sixties

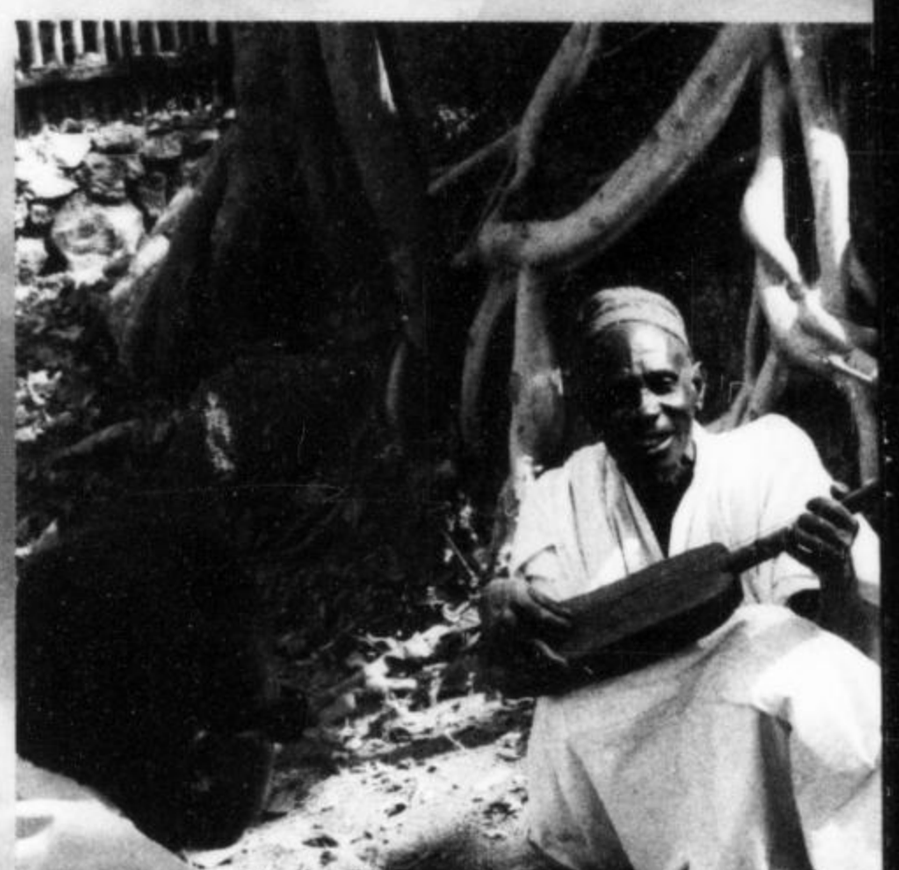


1960. The International Campaign for the Safeguard of the Monuments of Nubia. *Unesco/Nenadovic*

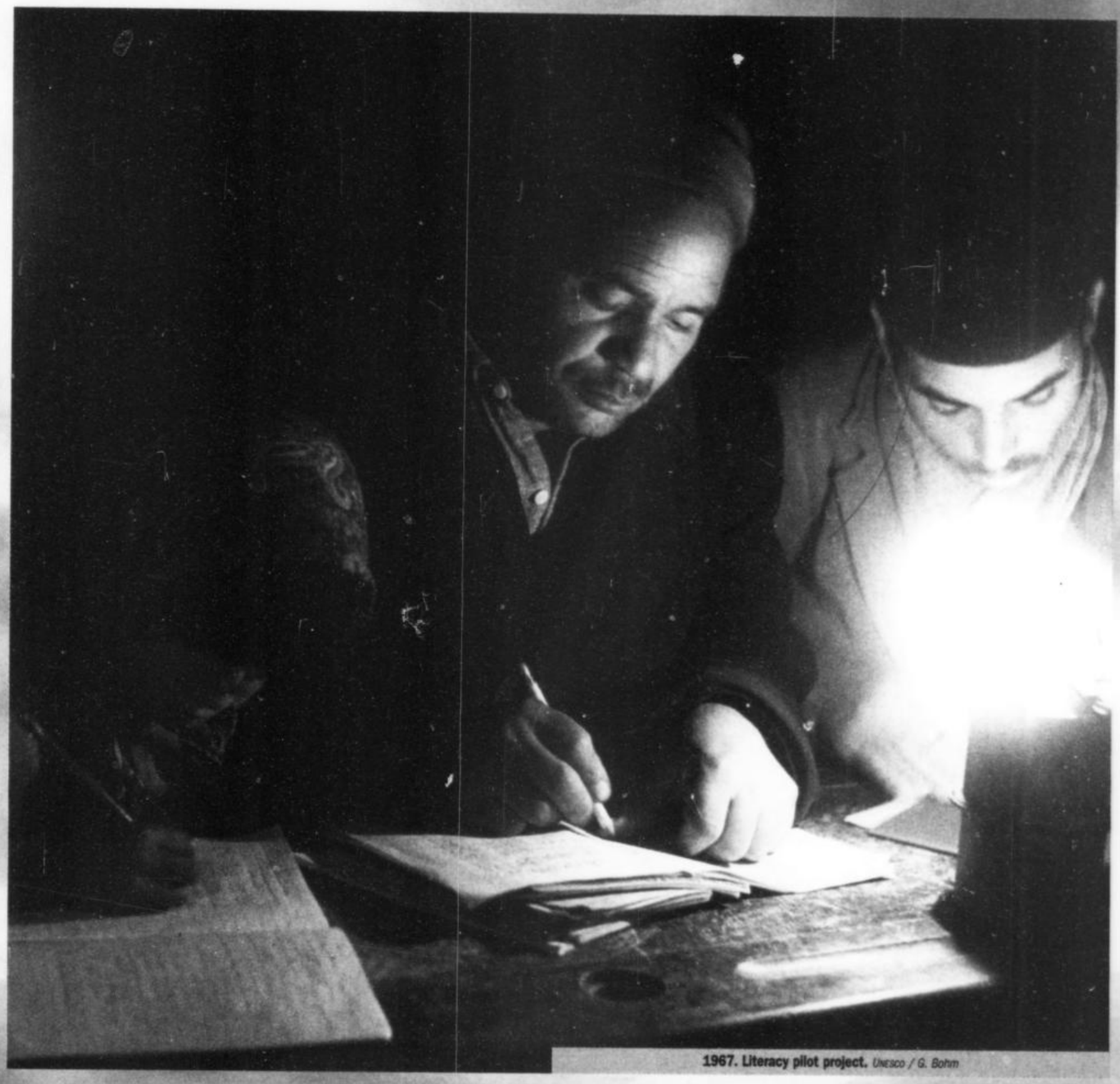


1965. The SITE satellite brings television to many Indian villages. *Unesco/Almasy*

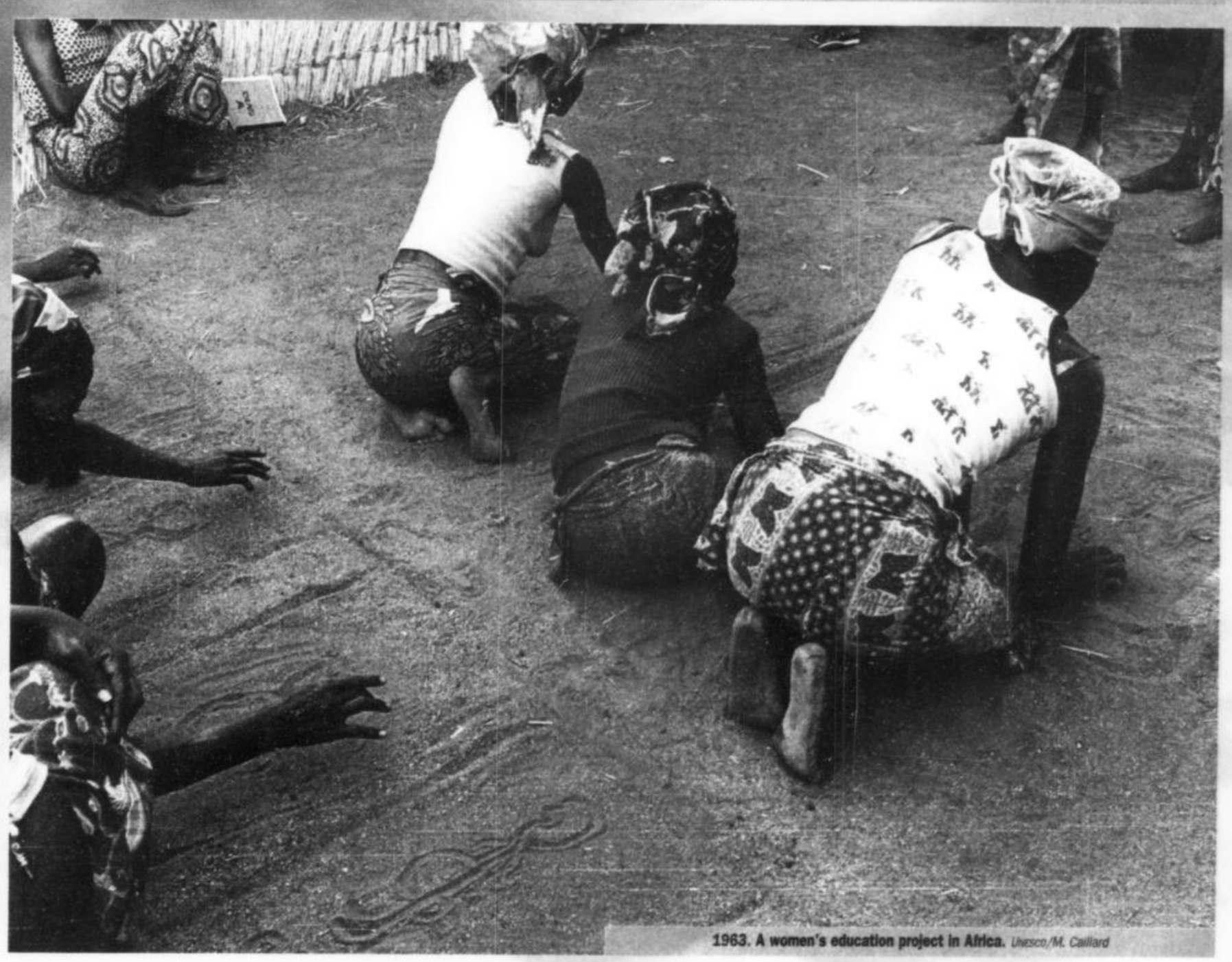
1966. Post-graduate training for students in developing countries. *Unesco/D. Roger*



1961. The Unesco Collection of recordings of traditional music. *Unesco/Almasy*



1967. Literacy pilot project. *Unesco / G. Bohm*



1963. A women's education project in Africa. *Unesco/M. Caillard*

50 years of UNESCO

the seventies

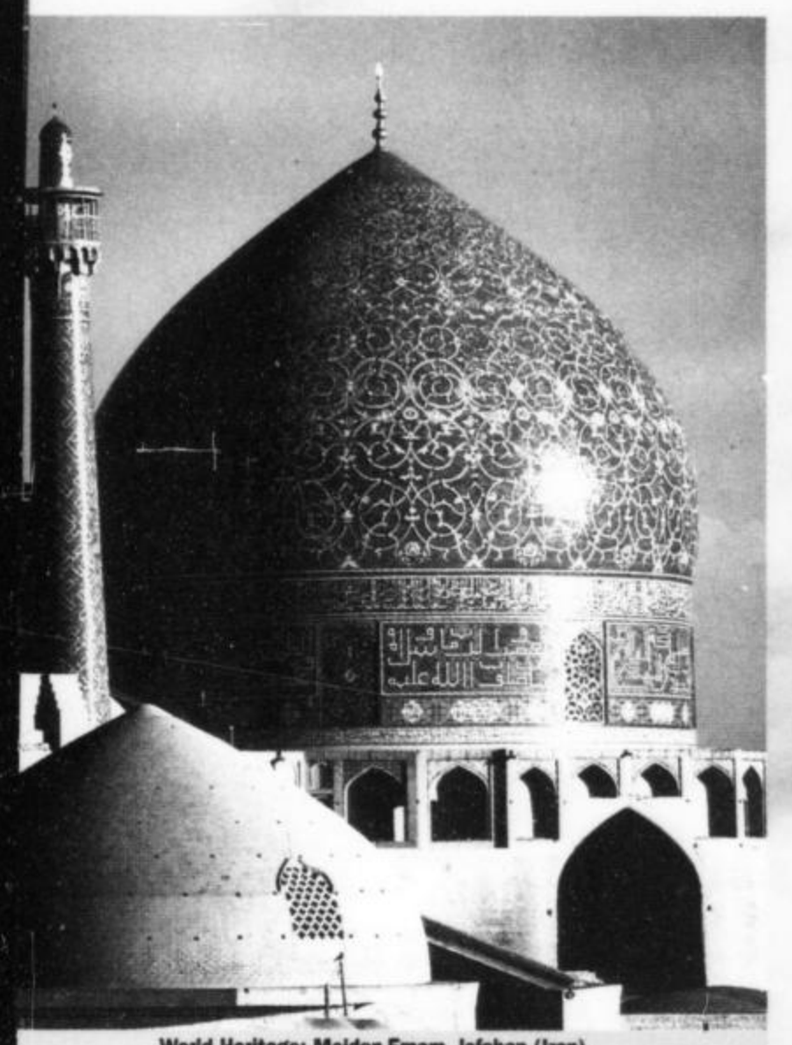
1976. Arid land research in the Mount Kulal biosphere reserve (Kenya).
© Yann Arthus-Bertrand/Earth from Above/UNESCO

1975. The International Hydrological Programme.
© Franco Zecchin, Paris

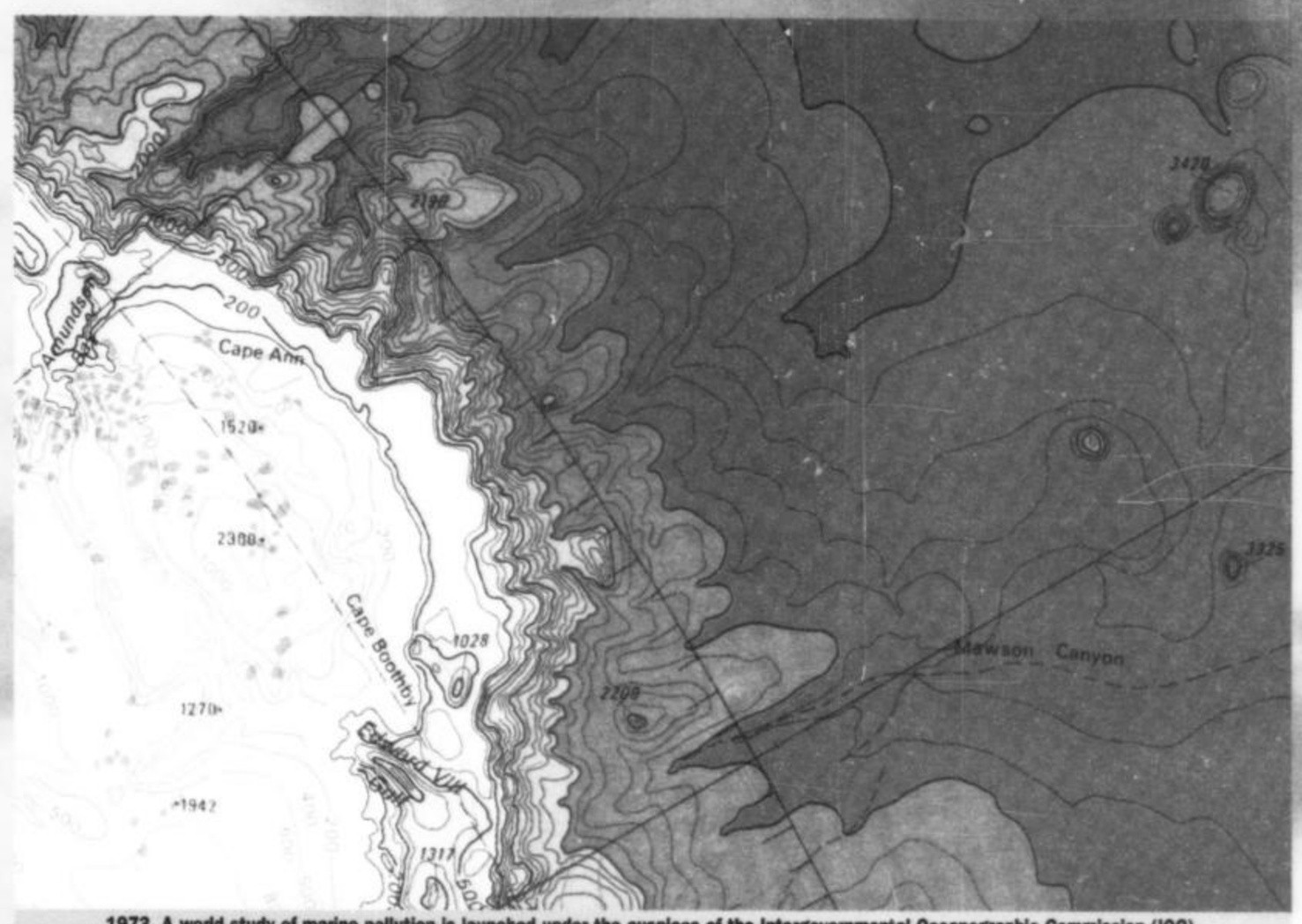
1976. The *Geological World Atlas.* *© CGMW/UNESCO*

1971. The Man and the Biosphere (MAB) programme. Wind power as a renewable energy source.
C. Bachelier © EDF Photo Library, Levallois-Perret

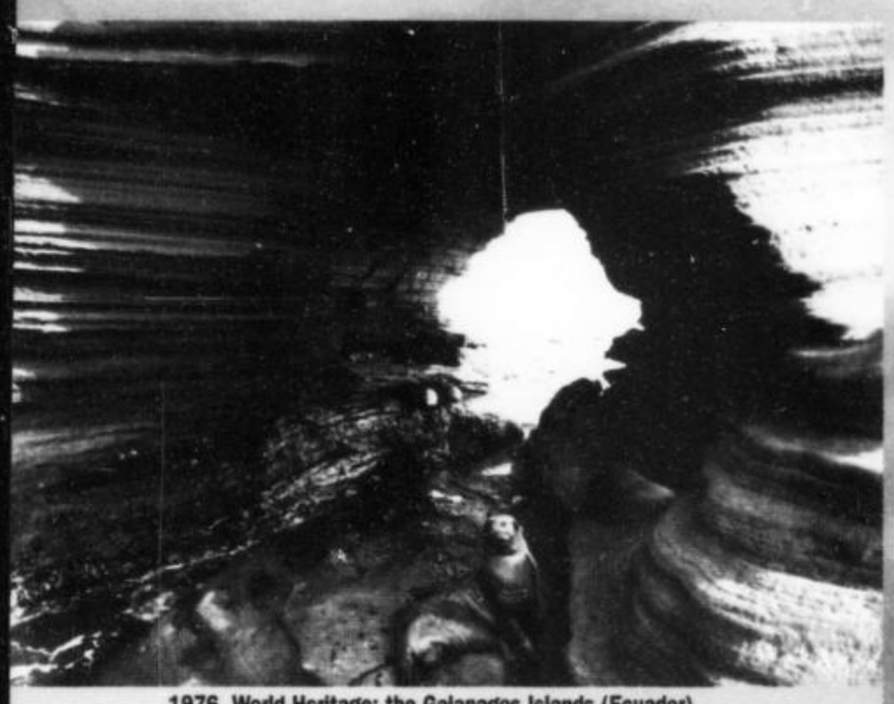
1972. Studying African oral traditions and promoting African languages. *UNESCO/M. Claude*



World Heritage: Meidan-Emam, Isfahan (Iran).
Koch © Rapho, Paris

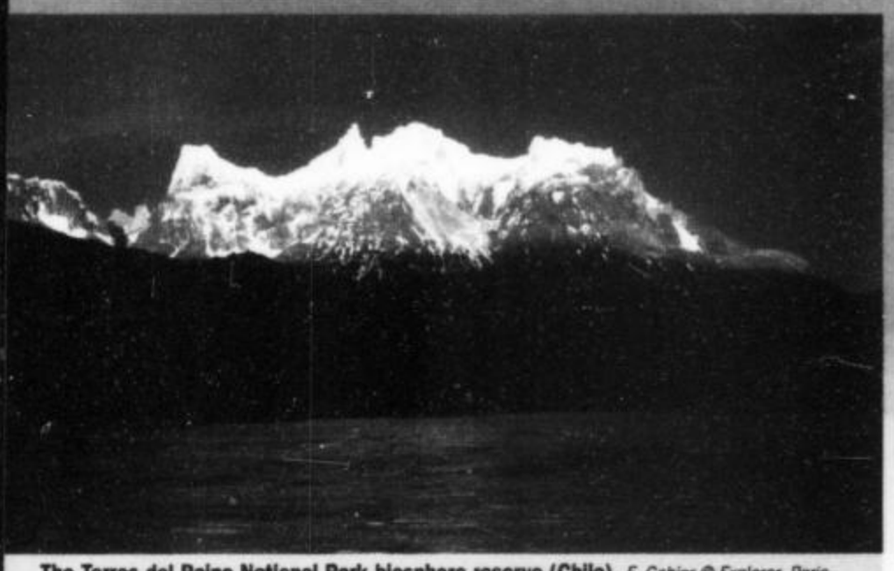


1973. A world study of marine pollution is launched under the auspices of the Intergovernmental Oceanographic Commission (IOC).
OHI/COI/SHC © Minister of Supply and Services Canada



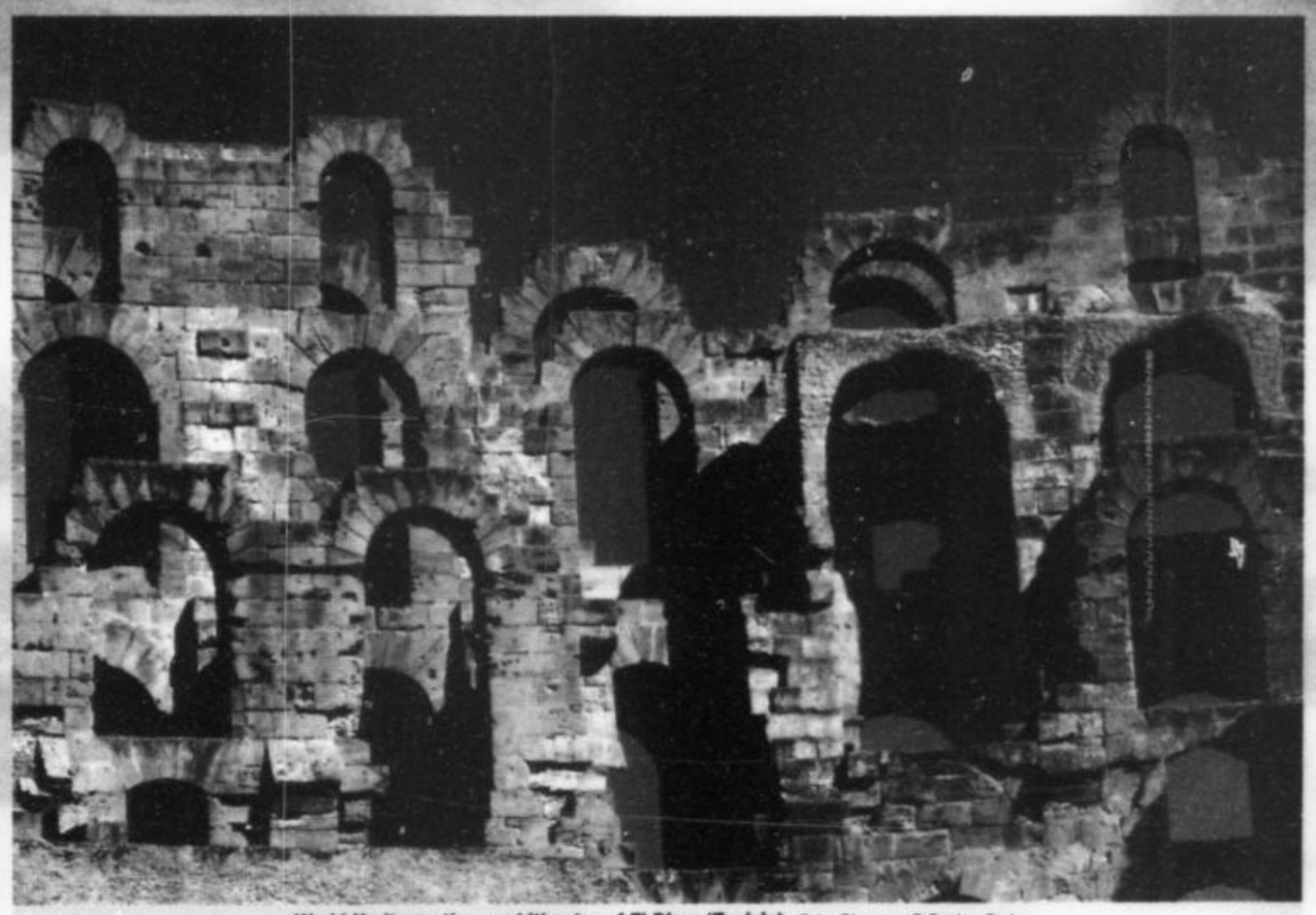
1976. World Heritage: the Galapagos Islands (Ecuador).
R. de Seynes © Rapho, Paris

1978. World Heritage: the rock-hewn churches of Lalibela (Ethiopia). *© A. de Wildenberg. Heritage 2001/"La Caixa" Foundation. Heritage 2001 is a Unesco-sponsored project executed by the "La Caixa" Foundation and GAMMA Presse Images with the participation of Kodak.*



The Torres del Paine National Park biosphere reserve (Chile). *F. Gohier © Explorer, Paris*

Bialowieza national park biosphere reserve (Poland). *S. Cordier © Explorer, Paris*



World Heritage: the amphitheatre of El Djem (Tunisia). *F. Le Diascorn © Rapho, Paris*

50 years of UNESCO

the eighties

Snow monkeys in a Japanese biosphere reserve (Shiga Highland).
Matsumoto © Explorer, Paris

World Heritage: Merida (Spain).
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World Heritage: the Imperial Palace of the Ming and Qing dynasties in Beijing (China).
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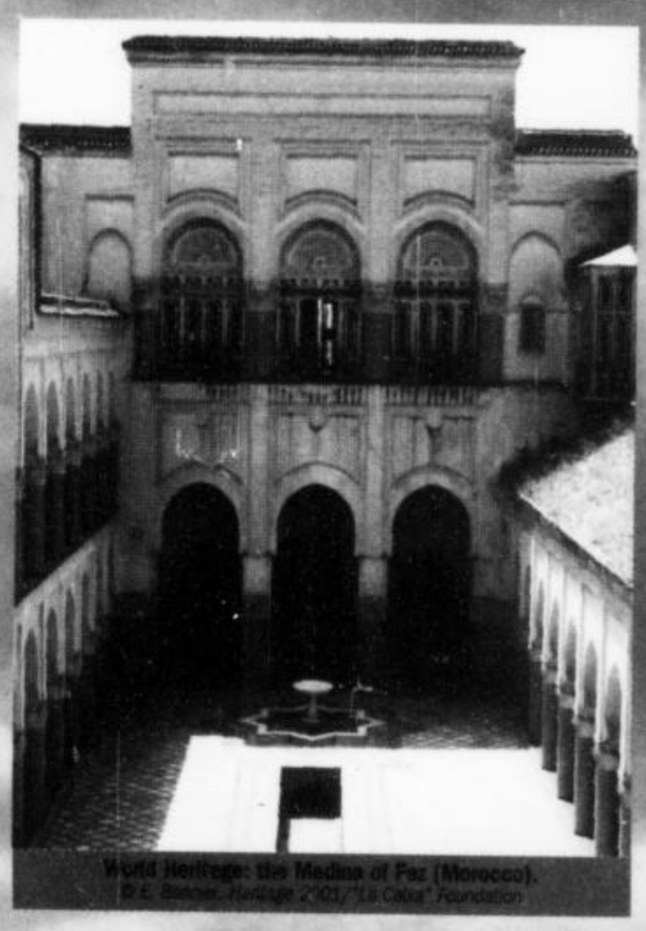

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World Heritage: Palmyra (Syrian Arab Republic).
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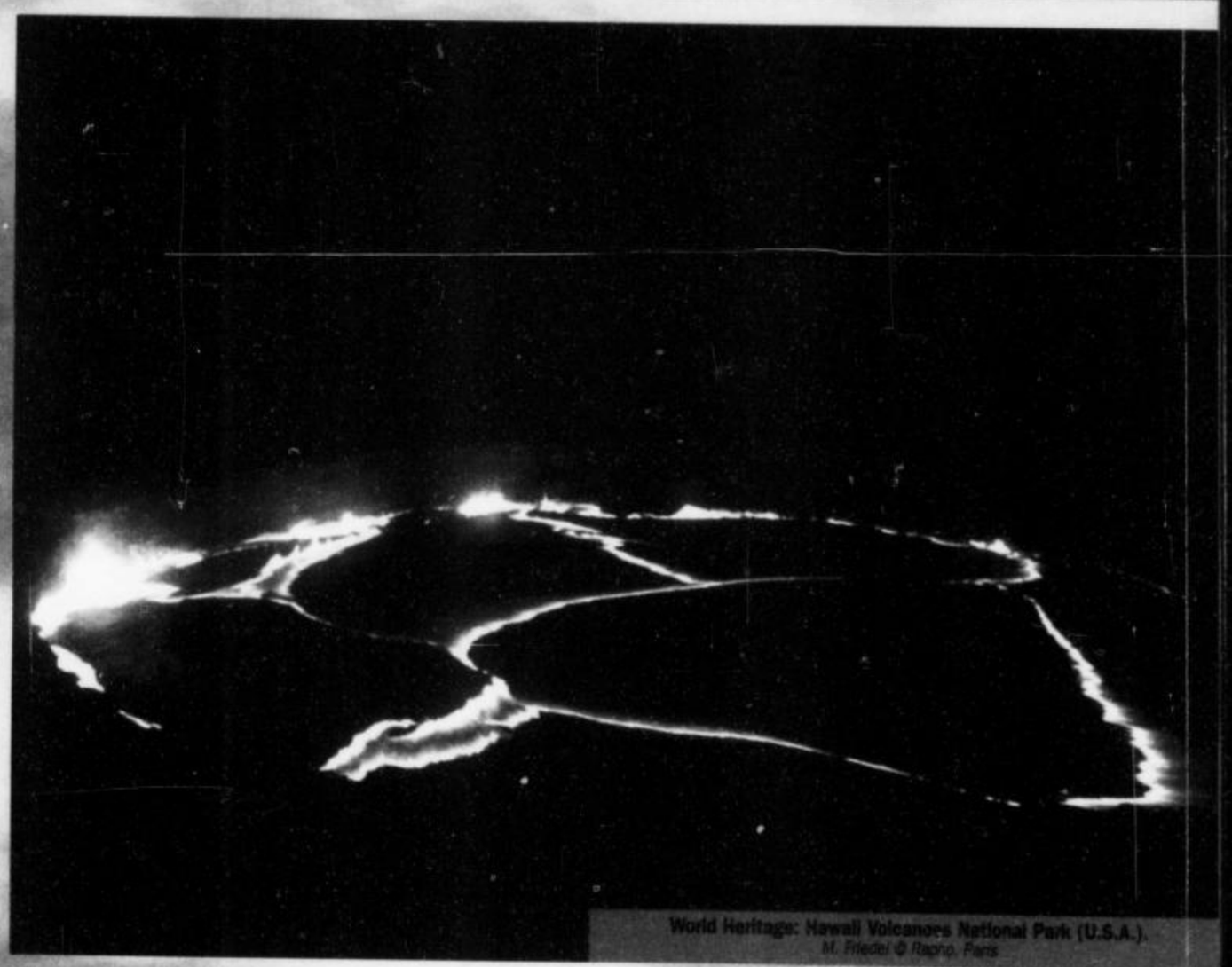
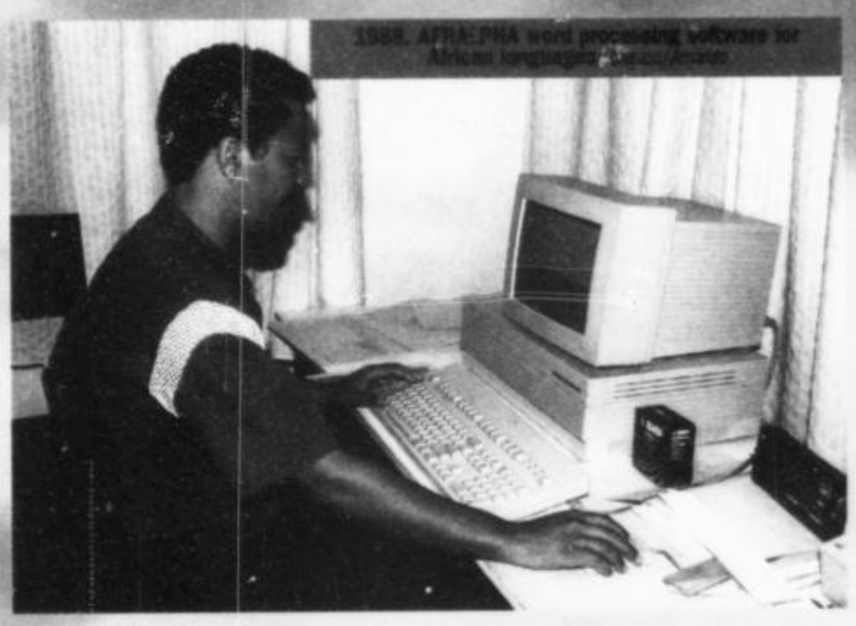


World Heritage: Hawaii Volcanoes National Park (U.S.A.).
M. Friedel © Rapho, Paris

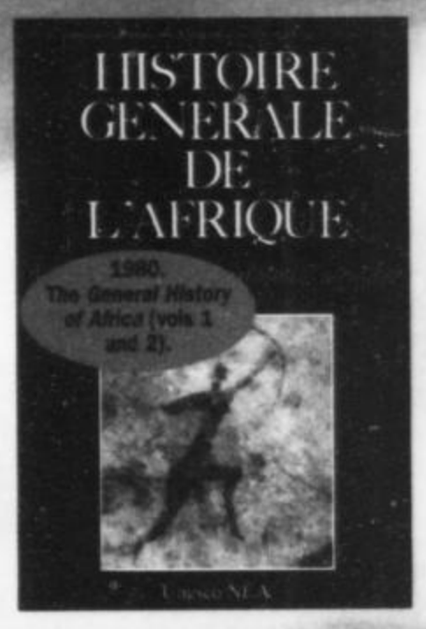
World Heritage: at the foot of the Bandagara cliffs, in the land of the Dogon people of Mali. © A. Wolf. Heritage 2001/"La Caixa" Foundation

World Heritage: the temple of Borobudur (Indonesia). Unesco/Toranzo

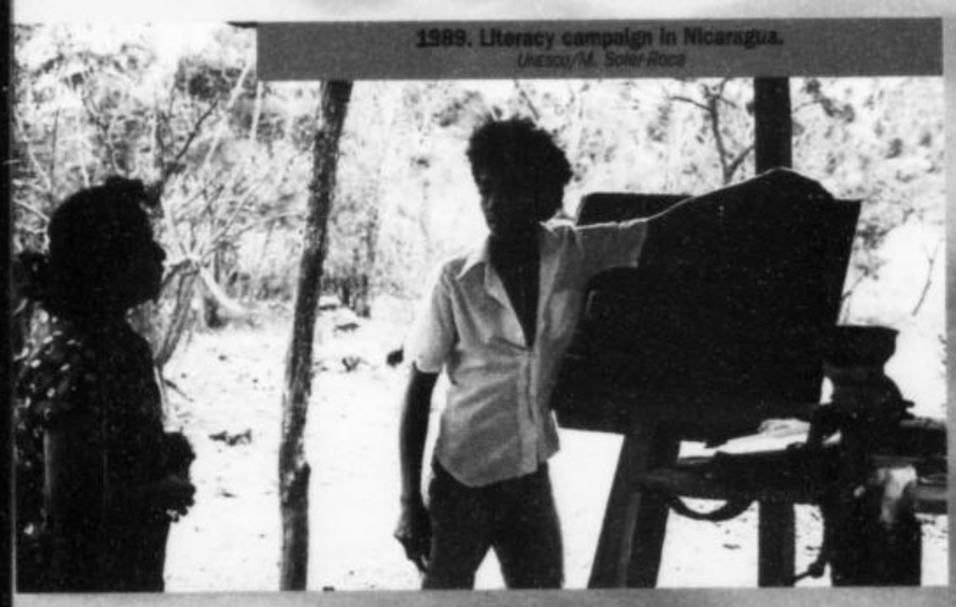
World Heritage: the Sanctuary of Bom Jesus do Congonhas (Brazil). © C. Freire. Heritage 2001/"La Caixa" Foundation

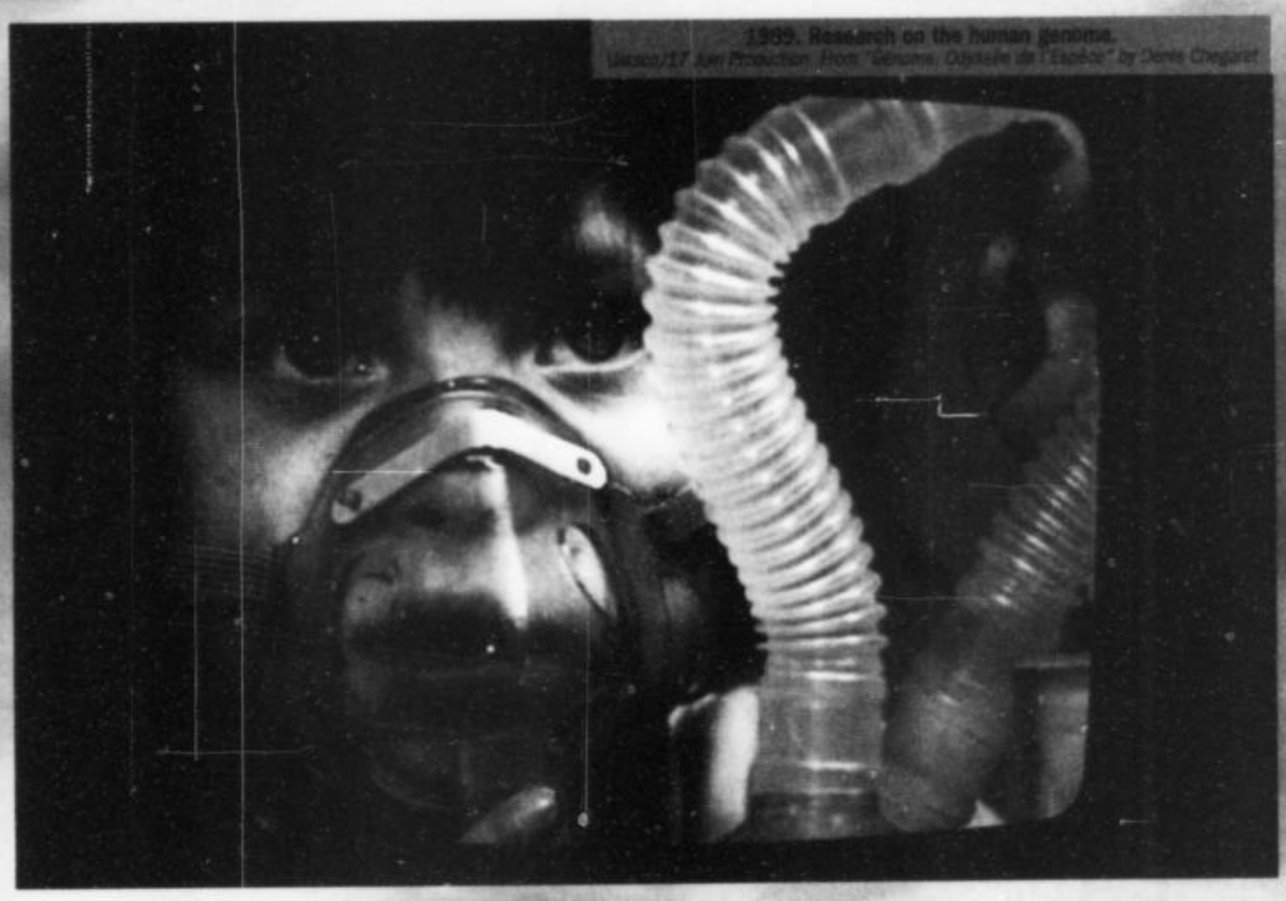


1988. AFRALPHA word processing software for African languages. Unesco/Zwanie



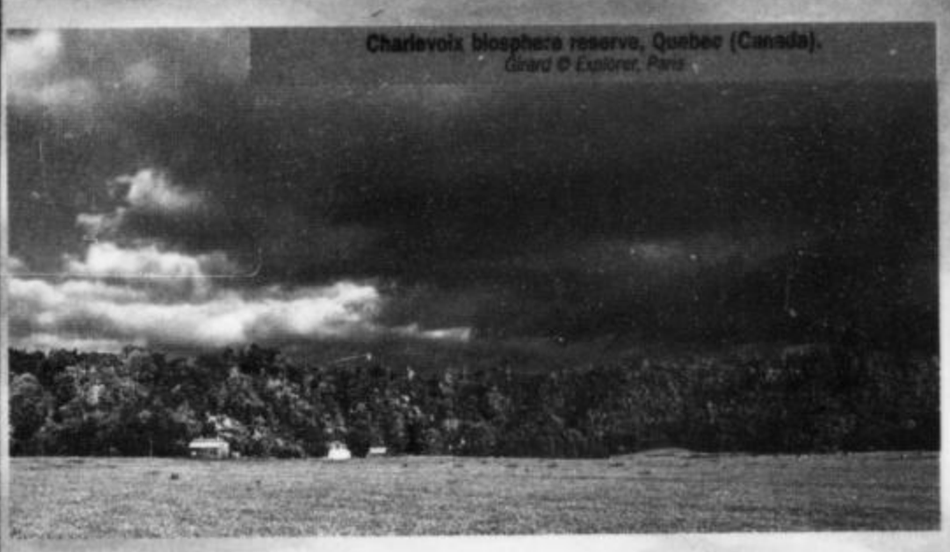
1989. Literacy campaign in Nicaragua. Unesco/M. Soler-Roca





1989. Research on the human genome. Unesco/17 Avn Production. From "Genome, Odyssée de l'Espèce" by Jean Chegaret

Charlevoix biosphere reserve, Quebec (Canada). Girard © Explorer, Paris



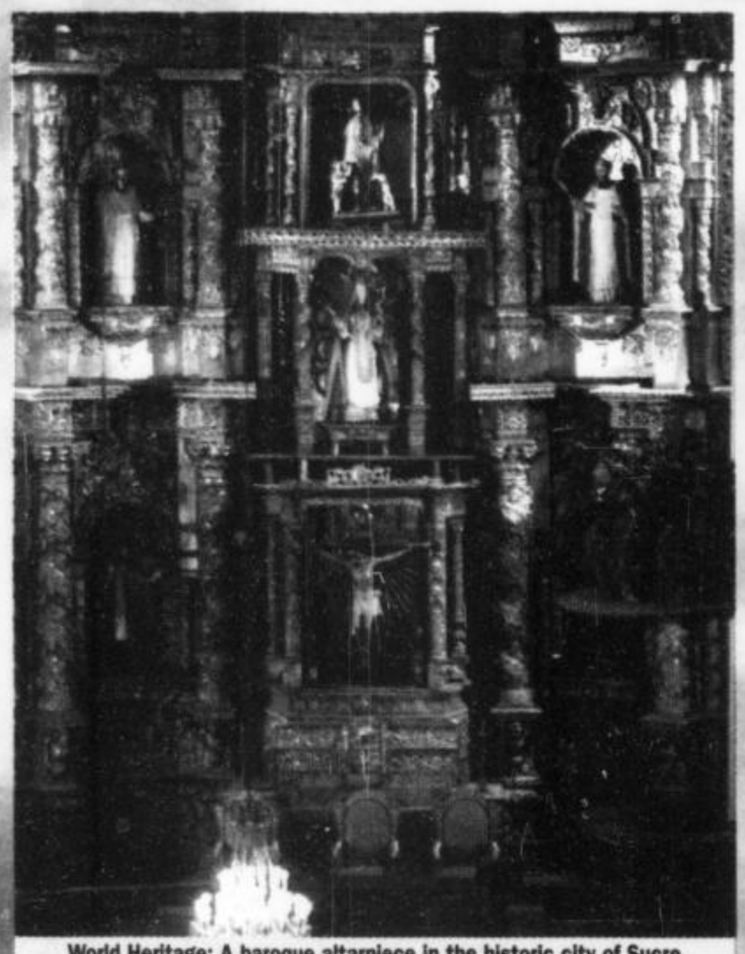
1988. The foundation stone of the new Library of Alexandria (Egypt) is laid. Below, maquette of the Library. Unesco

1985-1987. Communication courses for women in developing countries. Unesco/Banga Radio

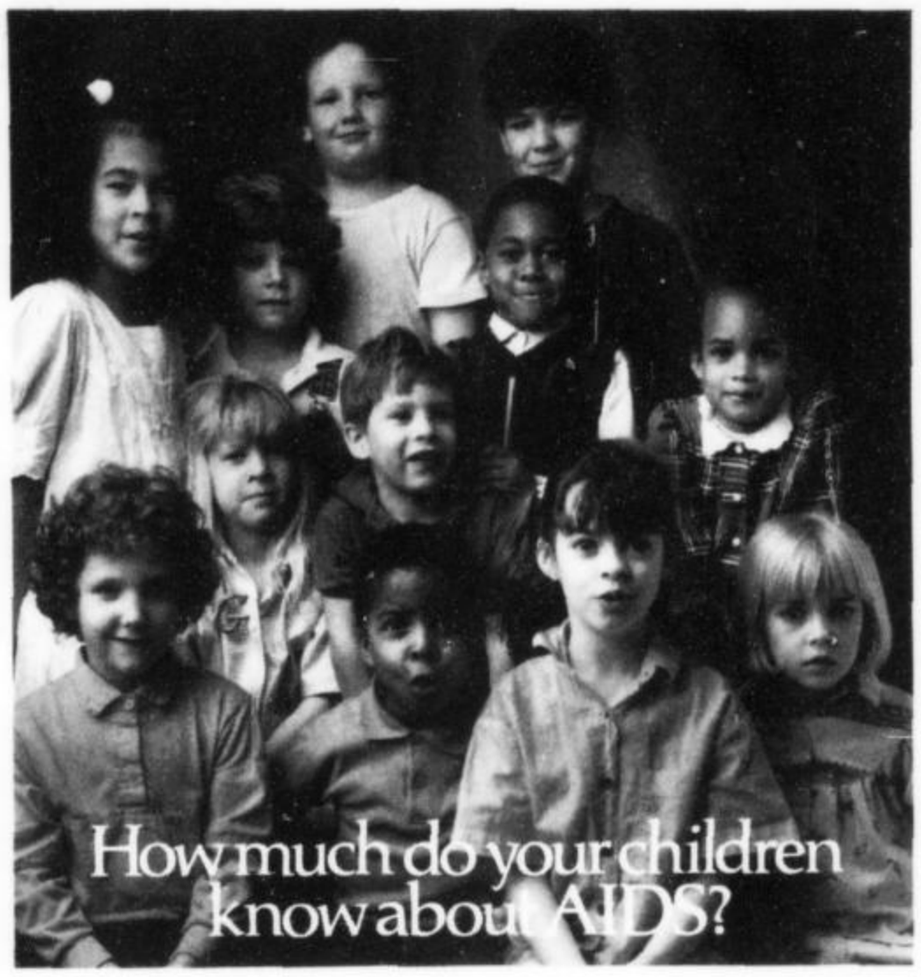
the nineties

50 years of UNESCO

1990. Research on the "Silk Routes, Routes of Dialogue". *UNESCO*



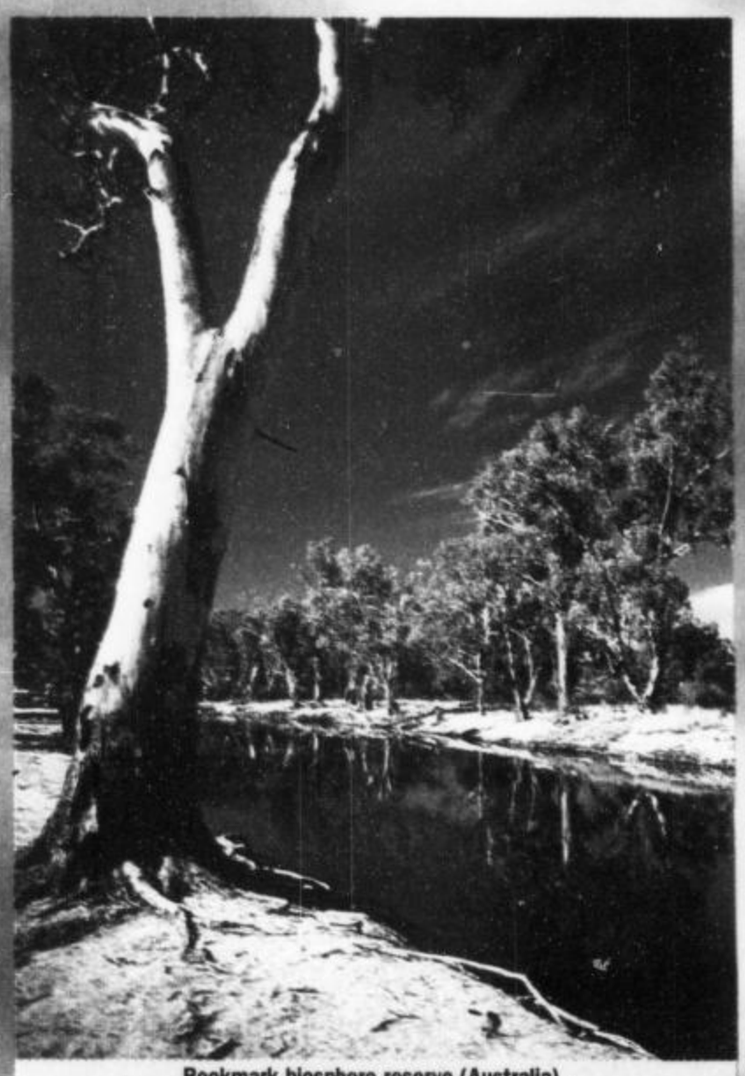
World Heritage: A baroque altarpiece in the historic city of Sucre (Bolivia). *G. Sioen © Rapho, Paris*



1993. The World Foundation for Aids Research and Prevention. *UNESCO*

World Heritage: Angkor (Cambodia). *C. Sappa © Rapho, Paris*

World Heritage: The Hermitage Museum, St. Petersburg (Russia). *© W. Denker. Heritage 2001/"La Caixa" Foundation*



Bookmark biosphere reserve (Australia). *© R. Thwaites*

1992. Aid for the Sarajevo daily newspaper *Oslobodenje* (Bosnia). *© AFP/G. Bouys*

The battle of El Alamein in the Egyptian desert on the defensive line protecting the Suez Canal. The British check the German advance.
© Archiv für Kunst und Geschichte, Berlin

"Operation Torch". The Allies land in North Africa and eventually expel the Axis troops.
© Keystone, Paris

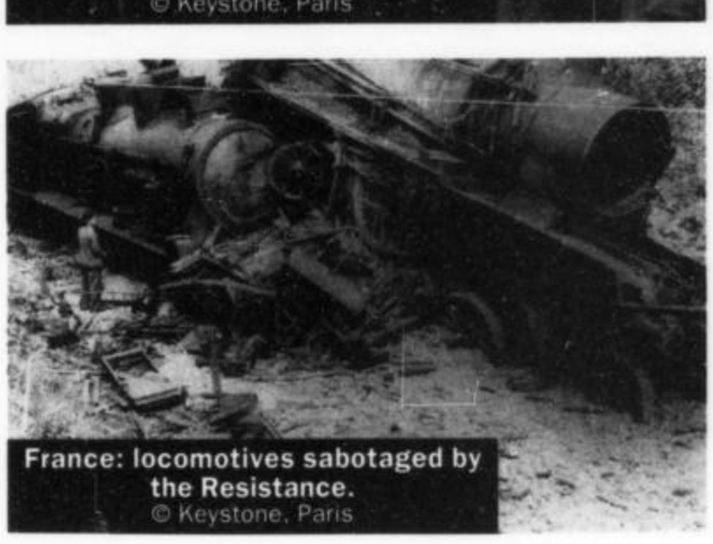
GROWING RESISTANCE

Italy: a resistance fighter in the *White Patrol* on the border between France and Italy.
© Keystone, Paris

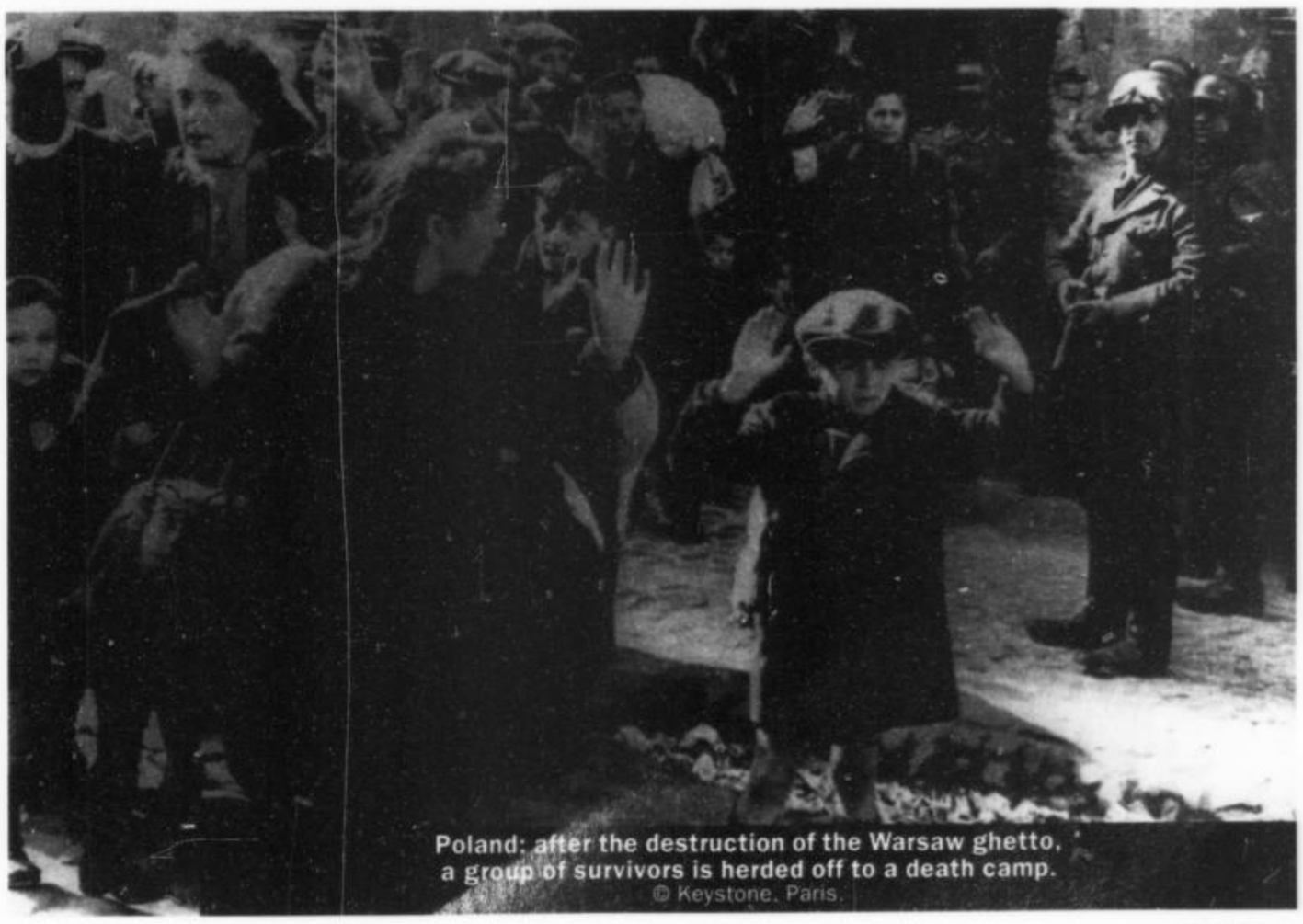
Yugoslavia: Tito (at head of table), leader of the Communist partisans.
© Keystone, Paris

China: women play a vital role in the defence of their country.
© Keystone, Paris

Greece: partisan activity spreads throughout the country.
© Keystone, Paris



France: locomotives sabotaged by the Resistance.
© Keystone, Paris



Poland: after the destruction of the Warsaw ghetto, a group of survivors is herded off to a death camp.
© Keystone, Paris.

1943

Generals Montgomery (Britain, left), the victor of El Alamein, and Leclerc (Free French) during the campaign in Tripolitania and Tunisia.
© L'Illustration/Sygma, Paris

Preparations in a North African port for the Allied invasion of Sicily.
© Keystone, Paris

The Allied Conference at Tehran. Seated left to right: Stalin, Roosevelt and Churchill.
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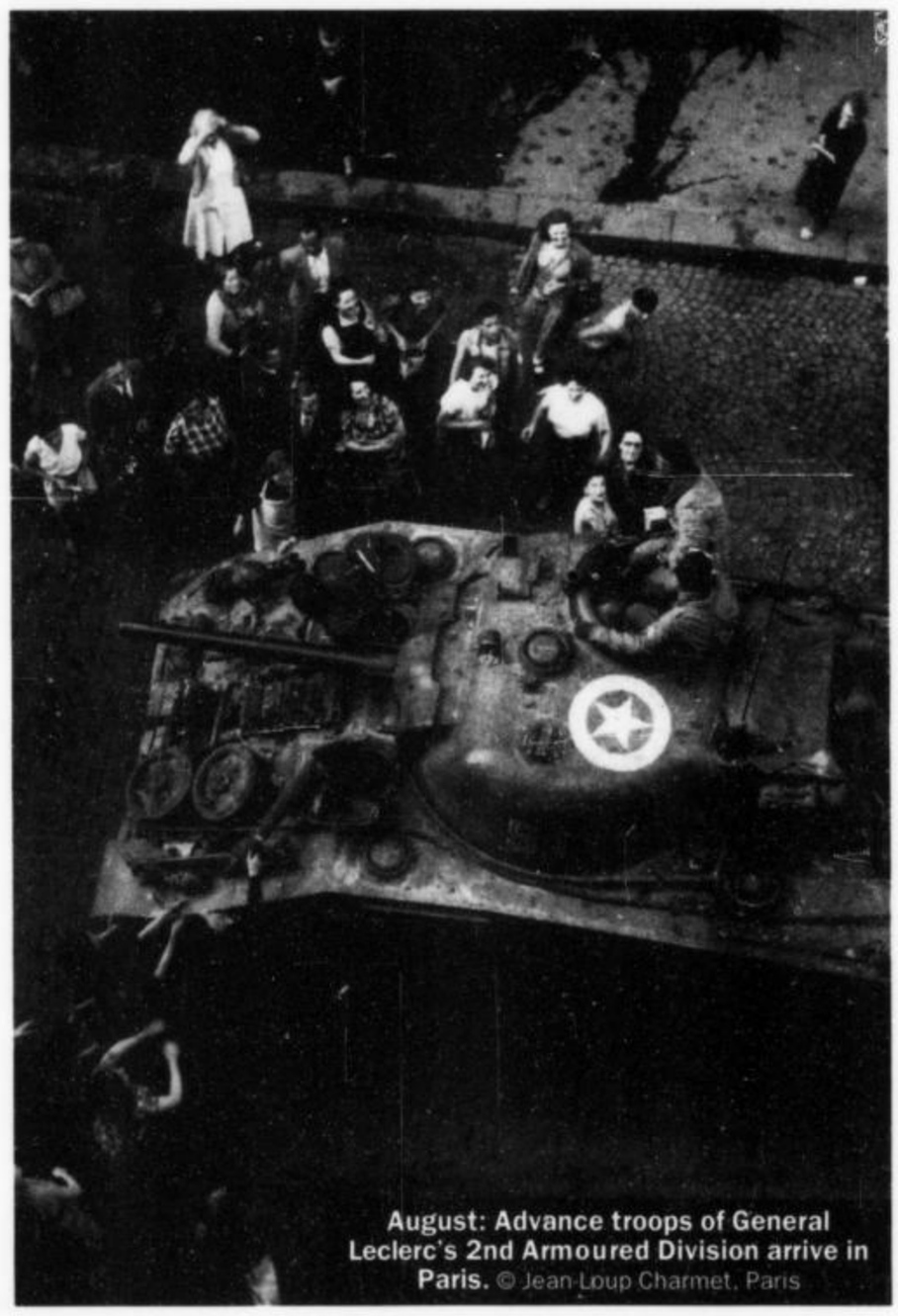
1944

THE BATTLE OF NORMANDY

Operation Overlord. The Allies land in Normandy on 6 June.
© Keystone, Paris
American, British, Canadian and French assault units land on five beaches (above right).
© Keystone, Paris
Right, American troops advance inland.
© Keystone, Paris



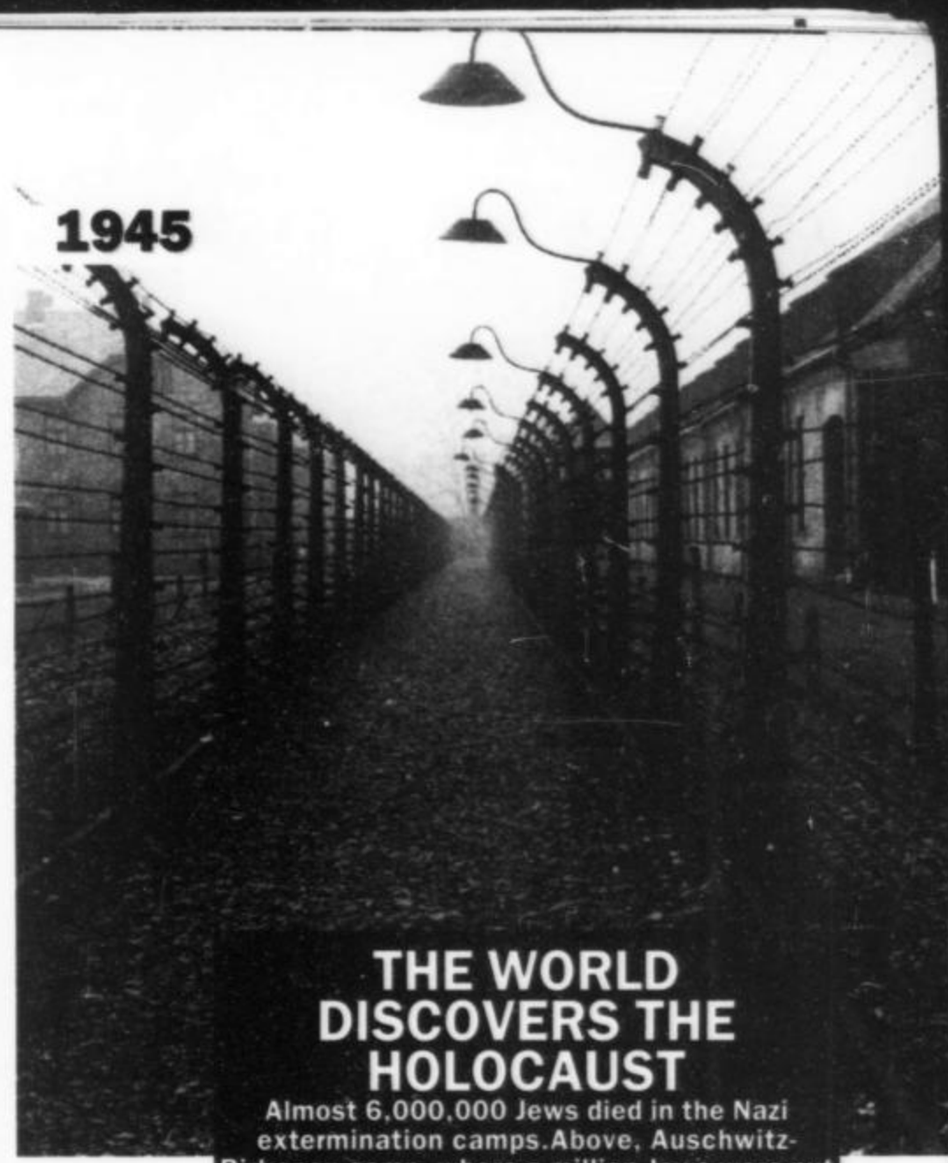
August: Advance troops of General Leclerc's 2nd Armoured Division arrive in Paris. © Jean-Loup Charmet, Paris

September: members of the F.T.P., France's major resistance movement, during the liberation of the Jura department.
© Keystone, Paris

Preparations in an African port for the Allied invasion of southern France.
© Keystone, Paris

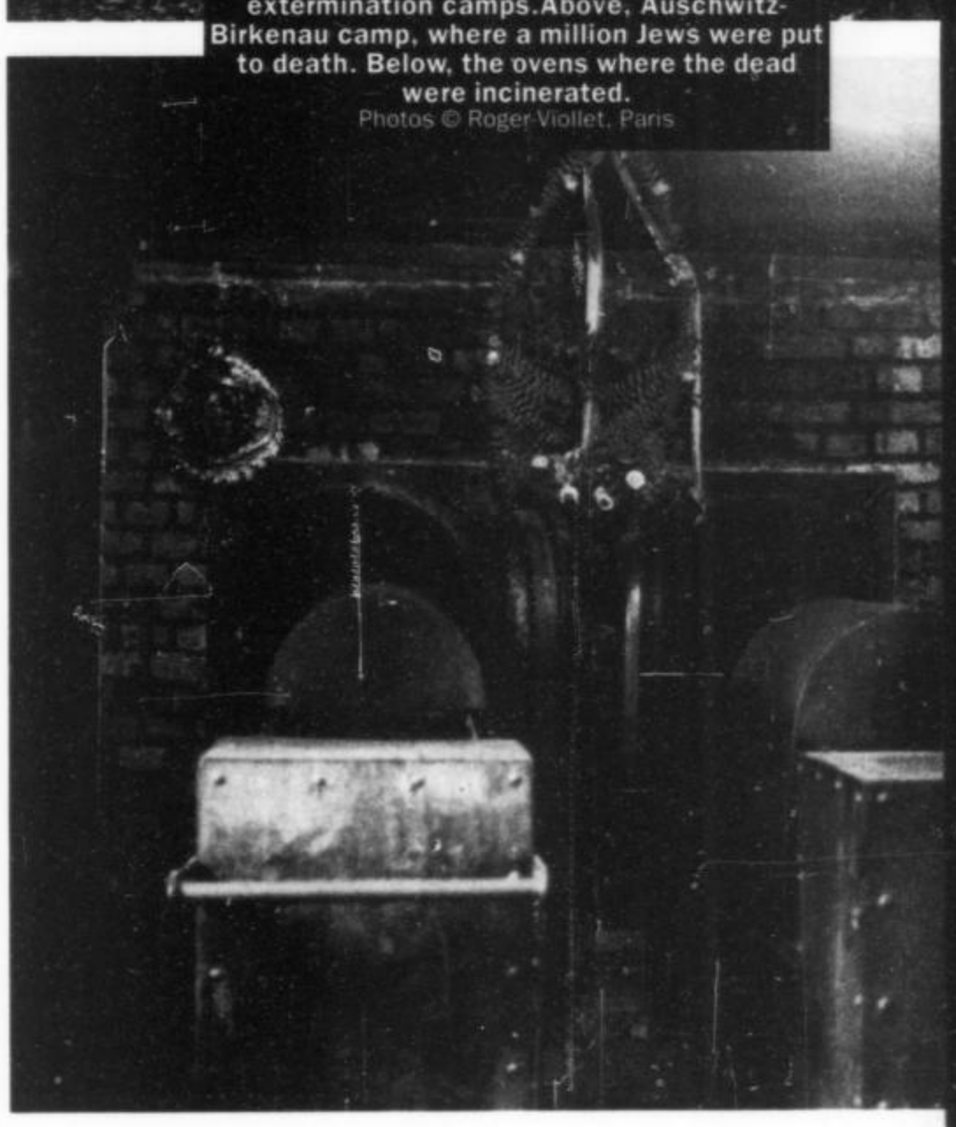
October: American troops led by General MacArthur (centre) land on Leyte (Philippines).
© Gamma, Paris

1945



THE WORLD DISCOVERS THE HOLOCAUST

Almost 6,000,000 Jews died in the Nazi extermination camps.Above, Auschwitz-Birkenau camp, where a million Jews were put to death. Below, the ovens where the dead were incinerated.
Photos © Roger-Viollet, Paris



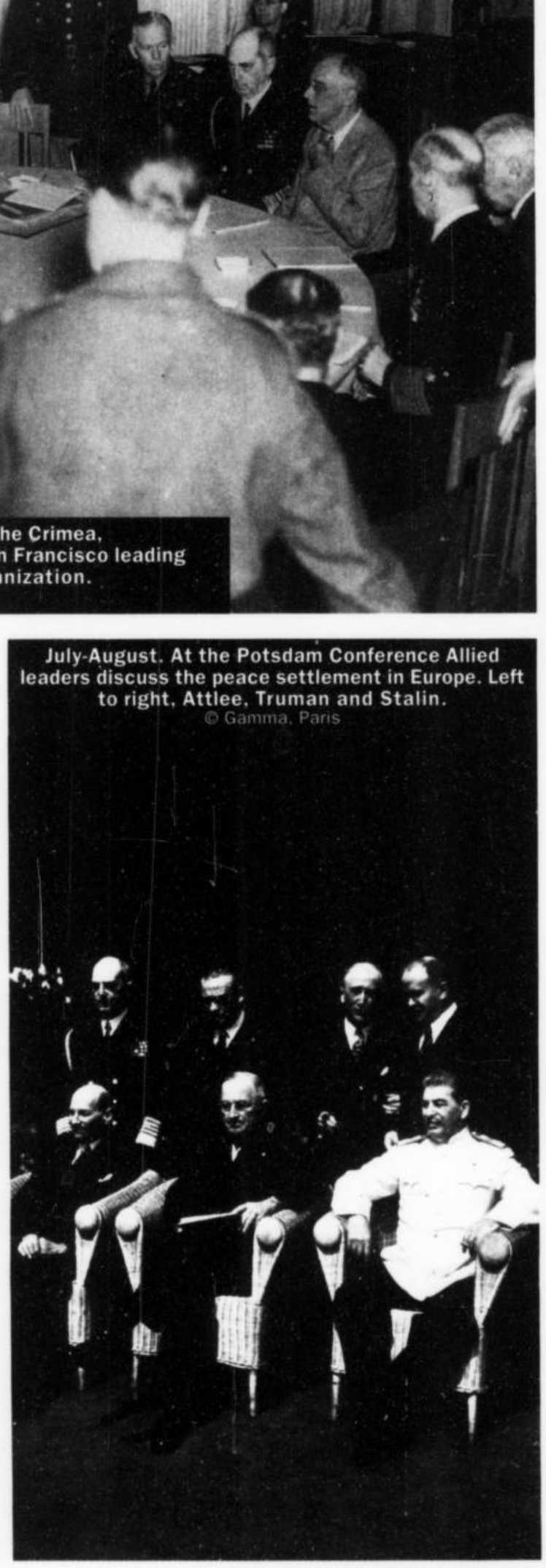
Berlin: Soviet soldiers raise the flag of victory over the Reichstag.
© Gamma, Paris

1945

4-11 February. At the Yalta Conference, in the Crimea, the Allied leaders decide to hold a conference in San Francisco leading to the creation of the United Nations Organization.
© Keystone, Paris

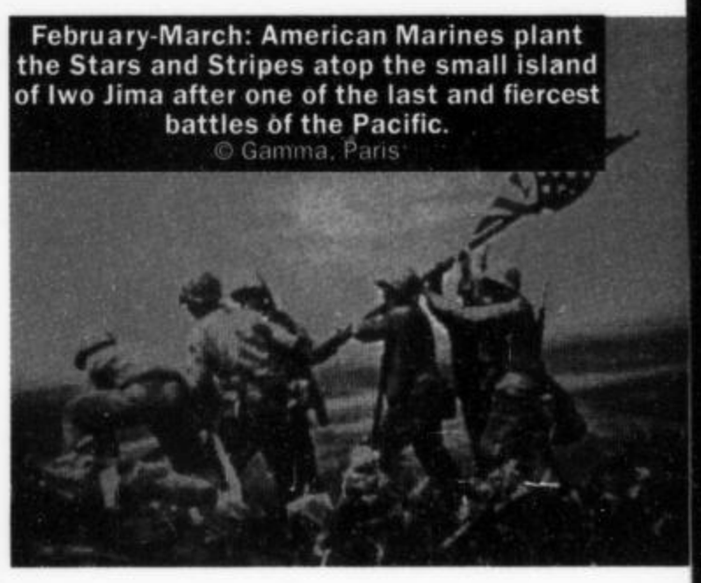
American warships in the Pacific.
© L'Illustration/Sygma, Paris

The Burma Road, which the Japanese had controlled for most of the war. Its liberation marked the end of the blockade of China.
© Keystone, Paris



July-August. At the Potsdam Conference Allied leaders discuss the peace settlement in Europe. Left to right, Attlee, Truman and Stalin.
© Gamma, Paris

The Allies turn to massive destruction in an attempt to force the Axis powers to capitulate. Below, Dresden (Germany).
© Keystone, Paris.

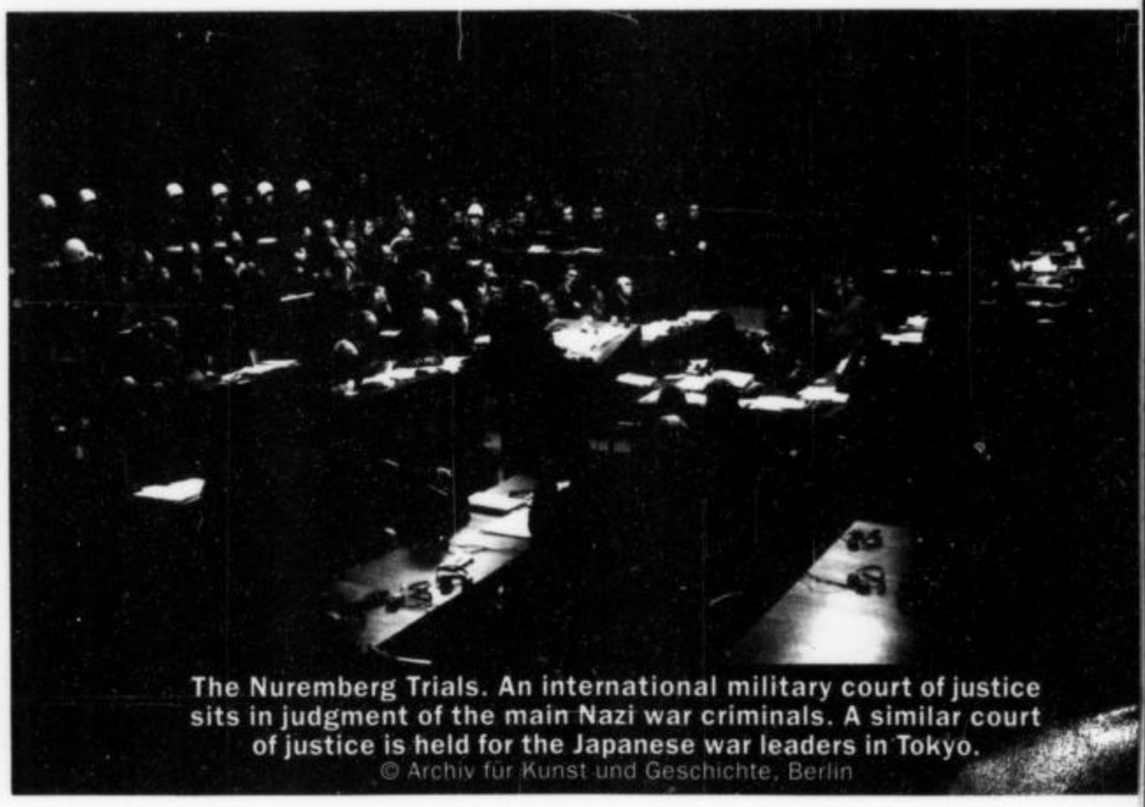


February-March: American Marines plant the Stars and Stripes atop the small island of Iwo Jima after one of the last and fiercest battles of the Pacific.
© Gamma, Paris

April: American and Soviet forces meet at Torgau on the Elbe.
© Gamma, Paris

8 May 1945: Paris erupts with joy after Germany's unconditional surrender.
© Gamma, Paris

Hiroshima (Japan).
© Uishida/Repros-Gamma, Paris



The Nuremberg Trials. An international military court of justice sits in judgment of the main Nazi war criminals. A similar court of justice is held for the Japanese war leaders in Tokyo.
© Archiv für Kunst und Geschichte, Berlin

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Ethiopia's new Jerusalem

by Kassaye Begashaw

Carved out of the living rock eight centuries ago, the churches of Lalibela are still a magnet for worshippers and pilgrims

The rock churches of Lalibela, which are hewn out of the mass of red volcanic tufa that makes up the high plateau of Lasta, are a remarkable offshoot of the flowering of Christian civilization in Ethiopia in the twelfth and thirteenth centuries.

Christianity was introduced into the Aksumite kingdom of Ethiopia around 330 A.D. At the end of the fifth century it spread as a result of the efforts of monks who had come from Antioch, but the allegiance of Ethiopian Christians went to the Coptic church.

In the ninth century, the Aksumite kingdom disintegrated under the pressure of Islam and the Beja invasions. Following the gradual contraction of the Byzantine empire, Christian Ethiopia became increasingly isolated. The upheavals that followed the collapse of the kingdom of Aksum and the shift of its political and religious centre southwards led to the emergence in the twelfth century of the Zaghawa dynasty, which reinforced ties with the Coptic church and encouraged missionary activity.

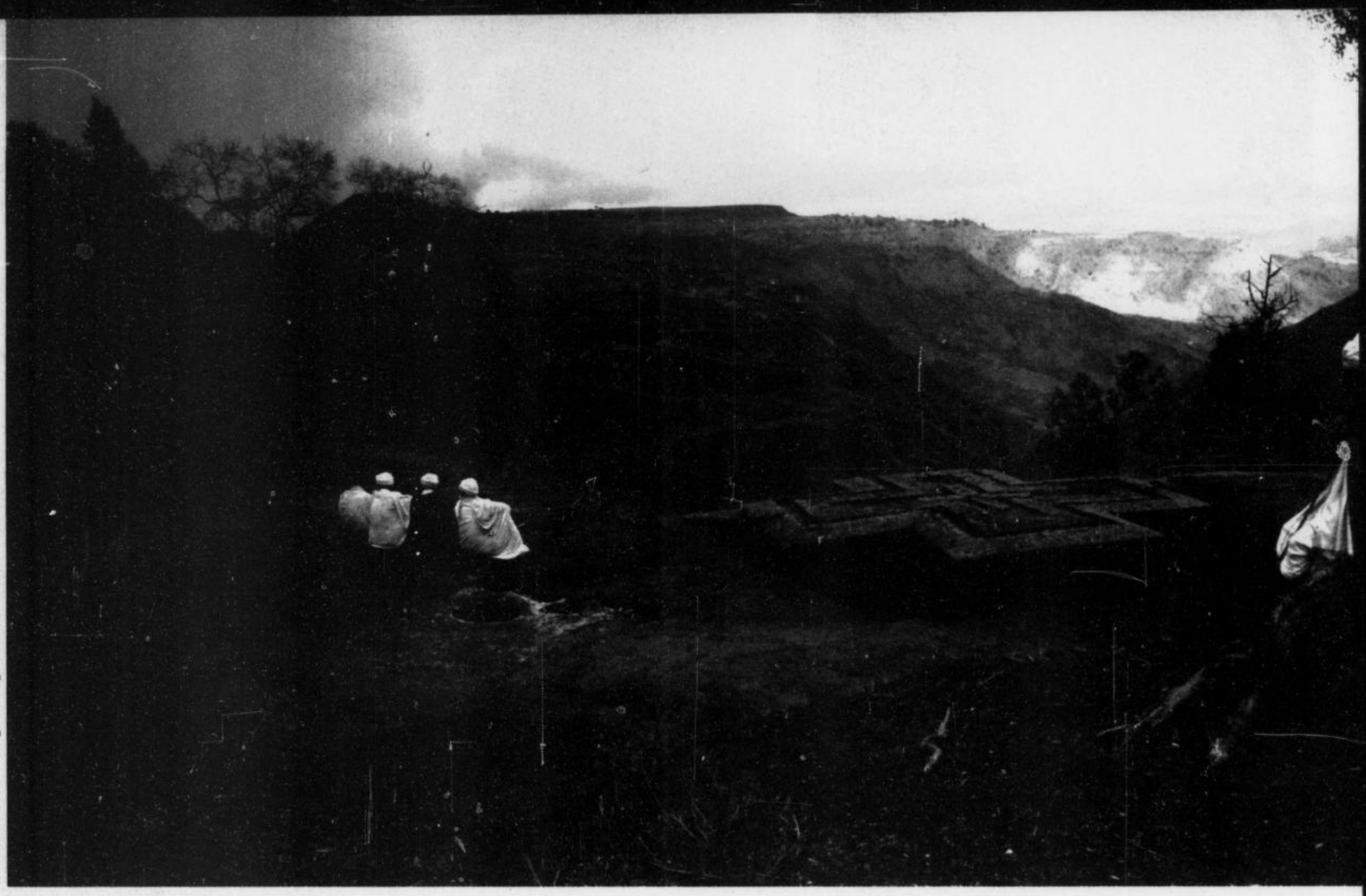
The new capital of the kingdom was set up on a mountainside in the region of Lasta. Now a small town perched at an altitude of 2,600 metres, the monastic centre of Lalibela, named after the Zaghawa king who excavated the churches there, was intended to be a new "Holy City".

A unique architectural complex

The eleven medieval churches and chapels of Lalibela, which form two distinct groups on either side of a mostly dried-up stream, the Yordanos (Jordan), scarcely rise above ground level. Four of them are monolithic. The others are smaller and are either semi-monolithic or underground their sites indicated to the faithful by a façade sculpted in the rock. Each of the two groups constitutes an organic ensemble enclosed in a kind of surrounding wall within which visitors are able to move around via a network of alleys and tunnels hollowed out of the tufa.

The monolithic churches, which stand in the centre of shafts seven to twelve metres deep, were carved straight out of blocks of rock separated from the rest of the plateau by

Above, a nun praying in a cave near the Church of Gabriel and Raphael at Lalibela.



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The sunken Church of St. George (Bete Gyorgis, 11th-13th centuries) is patterned on the shape of a Greek cross.

Opposite page, the north-west façade of the Church of Gabriel and Raphael.

trenches. Carving started at the top (the vaults, ceilings, arches and upper windows) and continued down to the bottom (the floor, doors and base). To allow the torrential summer rains that affect this region to run off, the floor of the spaces created in this way are on a slight incline. Protruding features of the architecture, such as roofs, gutters, cornices, lintels and window sills, project to a varying degree depending on the prevailing direction of the rain.

The excavation work apparently took place in several stages, so that architects, workers and craftsmen could work at eye level without having to erect scaffolding. Some hewed the monolith out of its surrounding rock, others fashioned it. Rubble was removed via openings such as windows and doors. Simple tools were used—picks and levers for excavation, and hatchets and chisels for finer details.

Rare paintings and sculpture

Probably the most impressive of Lalibela's churches is Bete Medhane Alem (the House of the World's Redeemer), which is 33 metres long, 23 metres wide and 11 metres high, with a sculpted cornice supported by 34 square pillars. It is the only church in Ethiopia which has five naves, as did the former cathedral of Aksum, according to Father Francisco Alvarez, the chaplain of a Portuguese embassy to the Solomonic court in the sixteenth century.

The interior is reached by three doors giving onto the west, north and south respectively, in accordance with Christian custom. It is built according to the basilica pattern, with an east-west orientation, and divided into eight bays lined with 28 pillars rising to the semicircular arches of the ceiling.

The neighbouring church, the House of St. Mary (Bete Maryam), which occupies a smaller area than Medhane Alem, is nine metres high. Its walls, which have windows in the Aksumite style, house three naves whose special feature is that they are covered from top to bottom with decorative paintings representing geometrical motifs (Greek crosses, swastikas, stars and rosettes) and animals (doves, phoenixes, peacocks, zebus, elephants and camels) and with frescoes—mostly now destroyed—illustrating scenes from the life of Jesus and Mary as described in the gospels. Some specialists

***The Flight into Egypt*, a wall painting in the Church of St. Mary (12th-13th centuries).**

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believe that these paintings date from the reign of King Zar'a Ya'kub (1434-1465). Above the main door is a bas-relief representing two horsemen slaying a dragon, an exceptional piece of sculpture given the scarcity of animated carvings in Ethiopian sanctuaries, as indeed throughout the Christian Middle East.

Quddus Mikaël (St. Michael), Bete Golgotha (the House of Golgotha) and Bete Selassie (the House of the Trinity) form an ensemble of churches. The largest of the three, Quddus Mikaël, is harmoniously divided up into three naves by cruciform pillars. The most notable feature of Bete Golgotha, a church dedicated to Christ's Passion, is its series of seven lifesize ecclesiastics carved out of the walls of the two naves. It also houses, in a niche, a Christ in his tomb.

The small chapel dedicated to the Holy Trinity (Bete Selassie) is reached through Bete Golgotha. It is trapezoid in layout and houses three monolithic altars. Arranged in a semi-circle and adorned with crosses, these altars contain cavities in their centre in which the priest placed the *Tobot* (Ark of the Covenant in Geez, the Ethiopian liturgical language) during mass. At the back of the crypt, two mysterious figures with their hands clasped in prayer stand on either side of an empty niche topped by a cross within a circle—perhaps a representation of the Trinity.

Bete Merkoreouos and Bete Gabriel Roufaël (the House of Mercury and the House of the Archangels Gabriel and Raphael) are underground chambers originally used for

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An Easter service.

non-religious purposes and later consecrated. Once they were probably royal residences. A little further on, Bete Abba Libanos contains features which are characteristic of both the monolithic churches and underground churches: its four sides are separated from the mountain by a high hollowed-out gallery that runs round the construction, while its roof is integral with the upper rock mass. Bete Amanouel (the House of Emanuel) is a three-naved basilica which displays all the features of the classical Aksumite style.

Set apart from the other churches at the bottom of an almost square shaft (22 x 23 metres), Bete Gyorgis (the House of St. George) has the shape of a Greek cross. Set on a very high base, the church contains neither paintings nor sculptures which might distract attention from the harmony and simplicity of its lines. On the ceiling, each arm of the cross is intersected by a semicircular arch carved out of the continuation of the pilasters that rise from the four corners of the central space. While the construction's lower windows are in the Aksumite style, the higher ones consist of pointed arches with fleurons similar to those found in Bete Golgotha.

The new Holy City

In addition to its eleven churches, which are on the World Heritage List, Lalibela contains other, less architecturally distinguished monuments whose presence helps us to understand the more general significance of the ensemble and its unity. That unity is the result of King Lalibela's sense of organization—even if it is unlikely that all the excavation work was carried out solely during his reign (1190-1225). The significance of this exceptional site is abundantly clear from its topography and toponymy: the stream that bisects the former capital is called the Jordan, and a stone cross marks the spot where John the Baptist baptised Jesus.

Christ's tomb in Bete Golgotha, the House of the Cross (Bete Masqual), the House of the Consecrated Bread (Bete Lehem), Adam's Tomb, and the platform in front of the House of the Archangels Gabriel and Raphael which local people call "Pilate's Pretorium"—all these monuments concentrated in a single spot suggest that Lalibela was intended to be a replica of the Holy City of Jerusalem, which was taken by Saladin in 1187, and which could not at the time be visited by pilgrims because of the Third Crusade. ■

A narrow passage between two churches.

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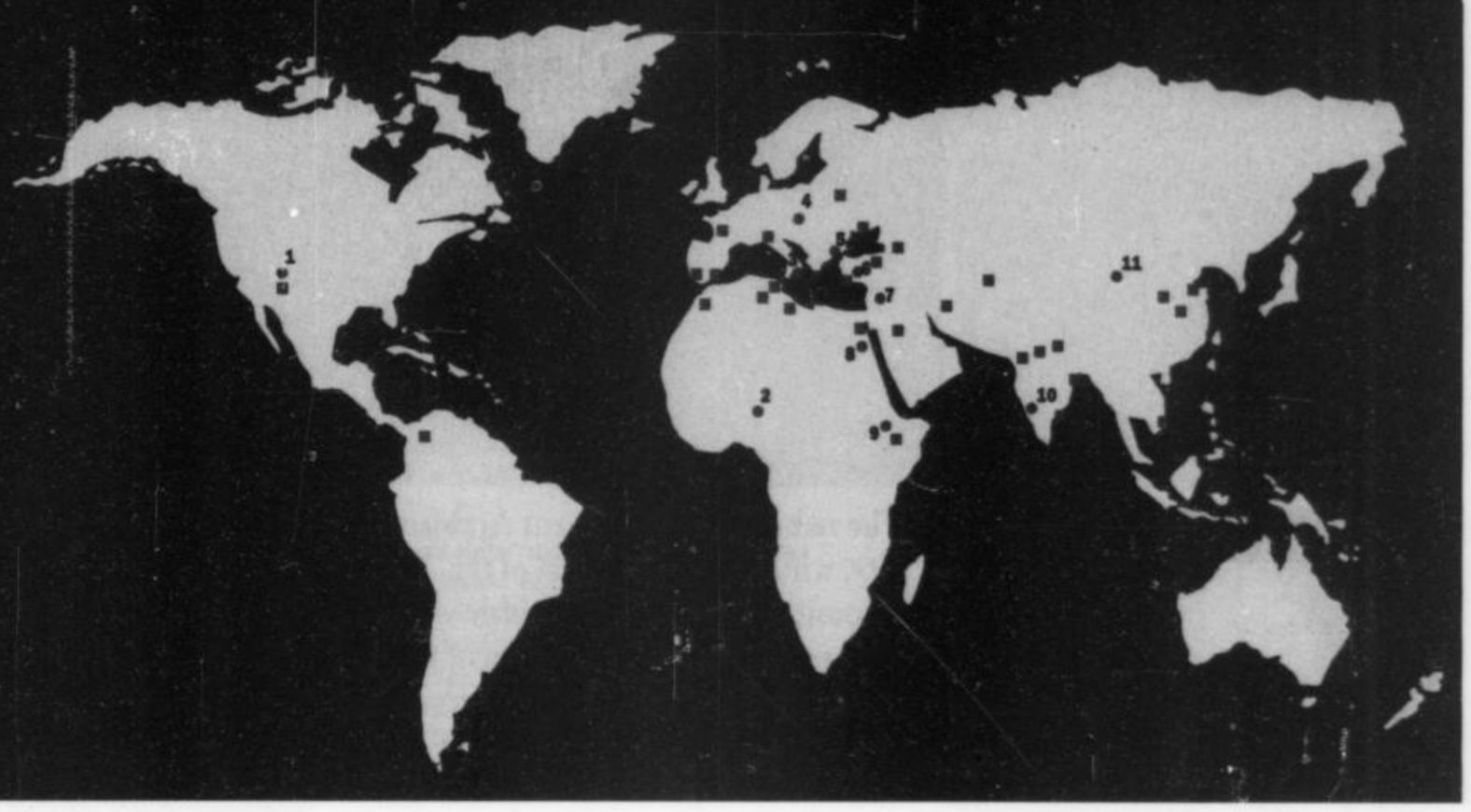
KASSAYE BEGASHAW,
of Ethiopia, is head of the Centre for the Study and Conservation of the Cultural Heritage at the Ethiopian Ministry of Culture and Sports Affairs.

Troglodytic sites on the World Heritage List

By the beginning of this year 440 cultural and natural sites of "outstanding universal value" had been placed on UNESCO's World Heritage List. The sites described on the following pages illustrate aspects of troglodytism in different times and places.



■ Troglodytic sites and regions
• Troglodytic sites on UNESCO's World Heritage List

1. Mesa Verde 2. Bandiagara 3. Matera 4. Wieliczka 5. Ivanovo 6. Cappadocia 7. Petra 8. Abu Simbel 9. Lalibela 10. Ajanta/Ellora/Elephanta 11. Mogao

UNESCO/ICOMOS, Paris

1

UNESCO/ICOMOS, Paris

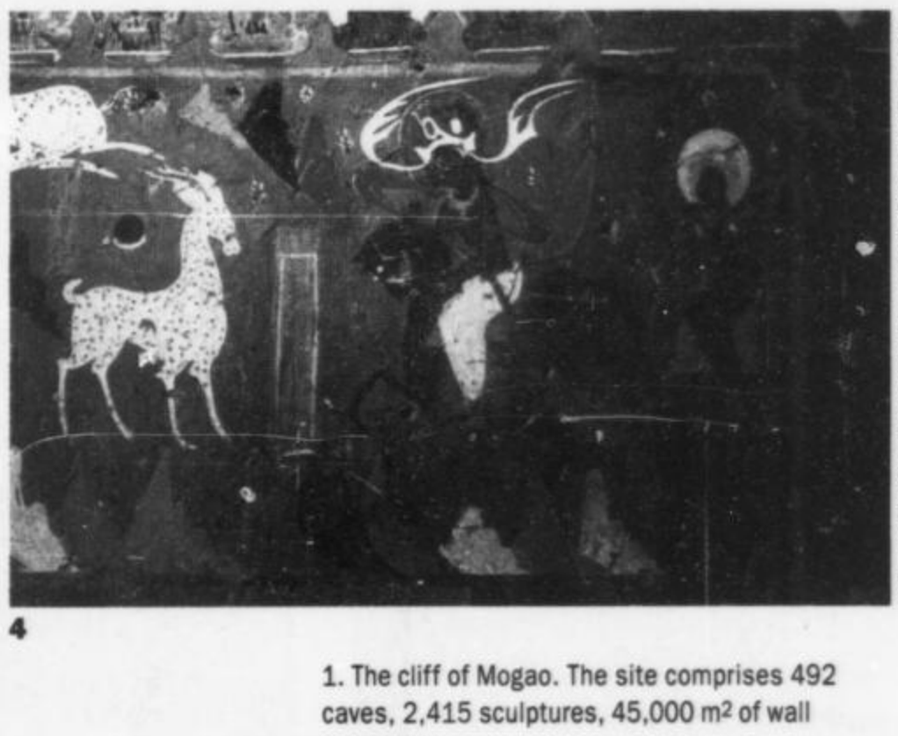
2

Mogao Caves (China)

The earliest work on these Buddhist rock temples dates from the fourth century A.D. The caves are located on the edge of the Taklamakan (Gobi) Desert in Gansu province, on the Silk Route, and were the site of intensive activity until the fourteenth century. The most important structures, including a 33-metre-high Buddhist temple, date from the Tang dynasty (seventh century). Adorned with frescoes and sculptures by artists of a variety of origins, the caves are a record of ten centuries of central Asian history.
Placed on the World Heritage List in 1987

UNESCO/ICOMOS, Paris

3



UNESCO/National Commission of the People's Republic of China for UNESCO

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1. The cliff of Mogao. The site comprises 492 caves, 2,415 sculptures, 45,000 m² of wall paintings.
2. Interior of cave 428, Northern Zhou dynasty (557-581 A.D.).
3. A façade built over a cave entrance.
4. Detail of a wall painting in cave 257 showing the king of the stags saving a human figure from drowning (Northern Wei dynasty, 386-534 A.D.).

Troglodyte sites on the World Heritage List

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1

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2

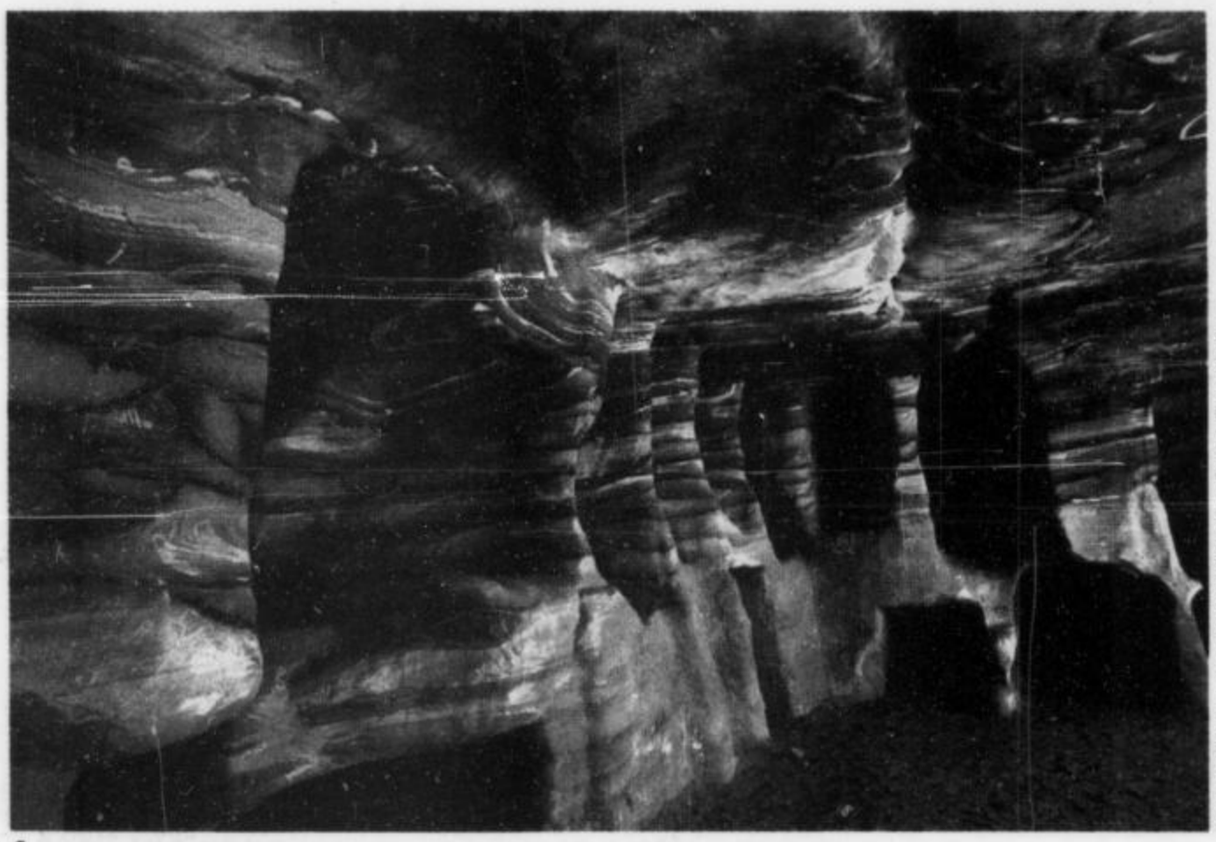
The archaeological site of Petra (Jordan)

© J. Rewerski

3

The remains of this ancient Arabian city, which was the capital of the Edomites and then, in the fifth century B.C., of the kingdom of the Nabataeans, stand in a natural circus reached via a narrow, two-kilometre-long defile. Temples, tombs and palaces, half free-standing, half hewn from the pink sandstone cliffs, form a unique blend of Oriental and Greco-Roman architectural traditions.
Placed on the World Heritage List in 1985

1. A Roman amphitheatre with a 3,000 to 4,000 audience capacity.
2. In background: an ancient inn for travelling merchants.
3. Water rises by capillary action and corrodes the base of the monuments.
4. A communal grave. The coloured striations in the rock are caused by the dissolution of minerals.
5. Human habitation of troglodyte shelters began over 2,000 years ago.
6. Façade of the *Khazna Firaoun* (Pharaoh's Treasury).



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UNESCO/P. Ilieva

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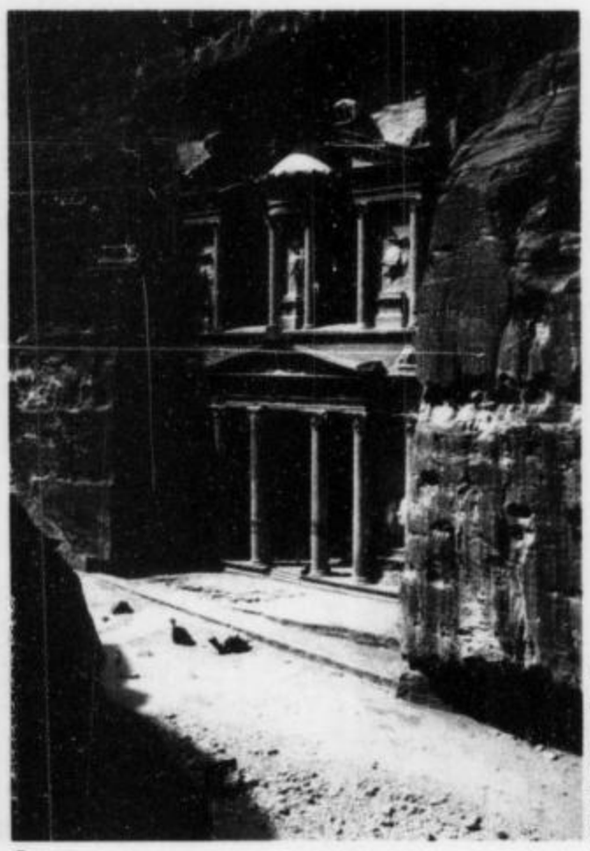

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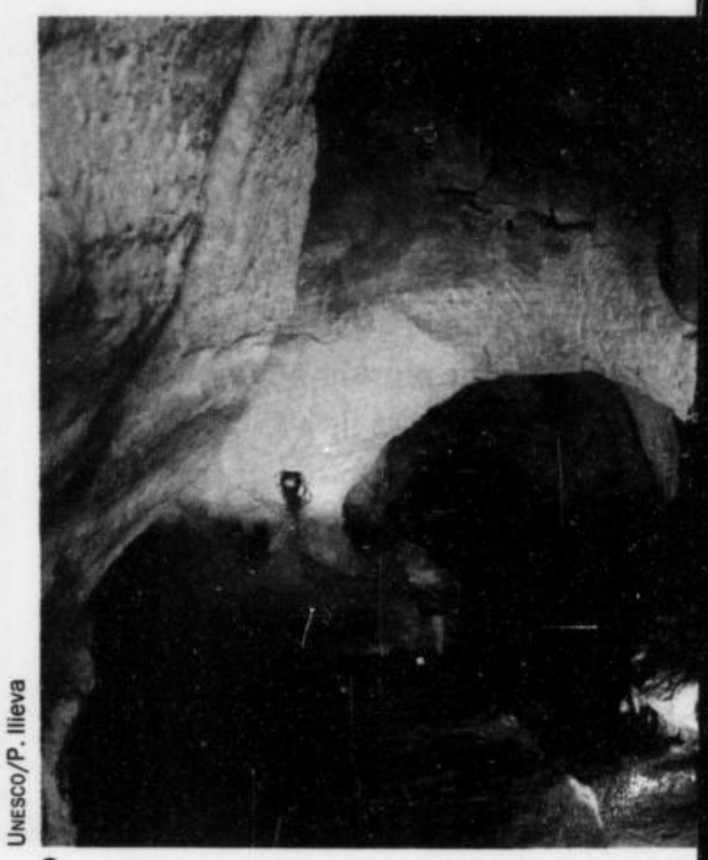

UNESCO/P. Ilieva

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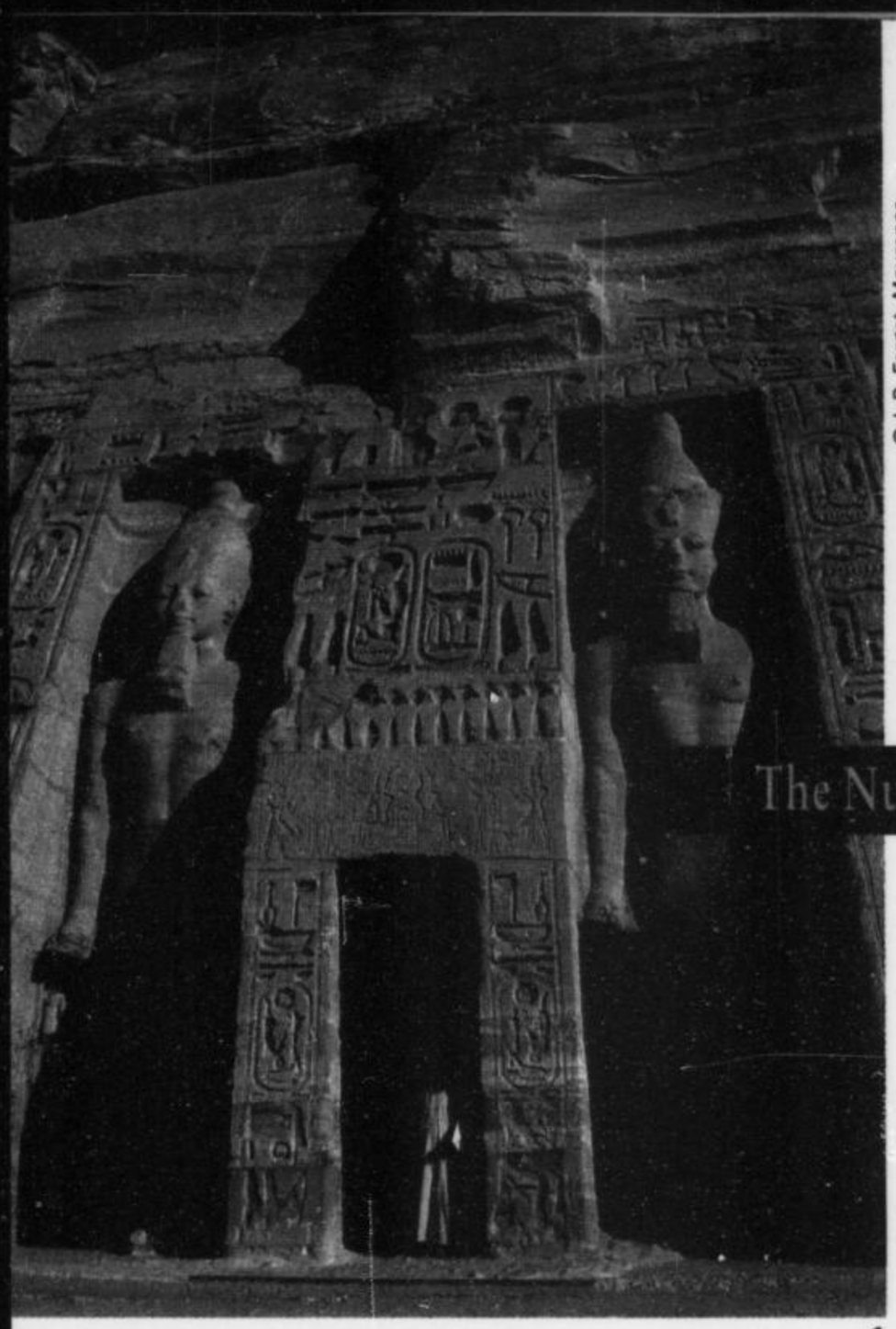

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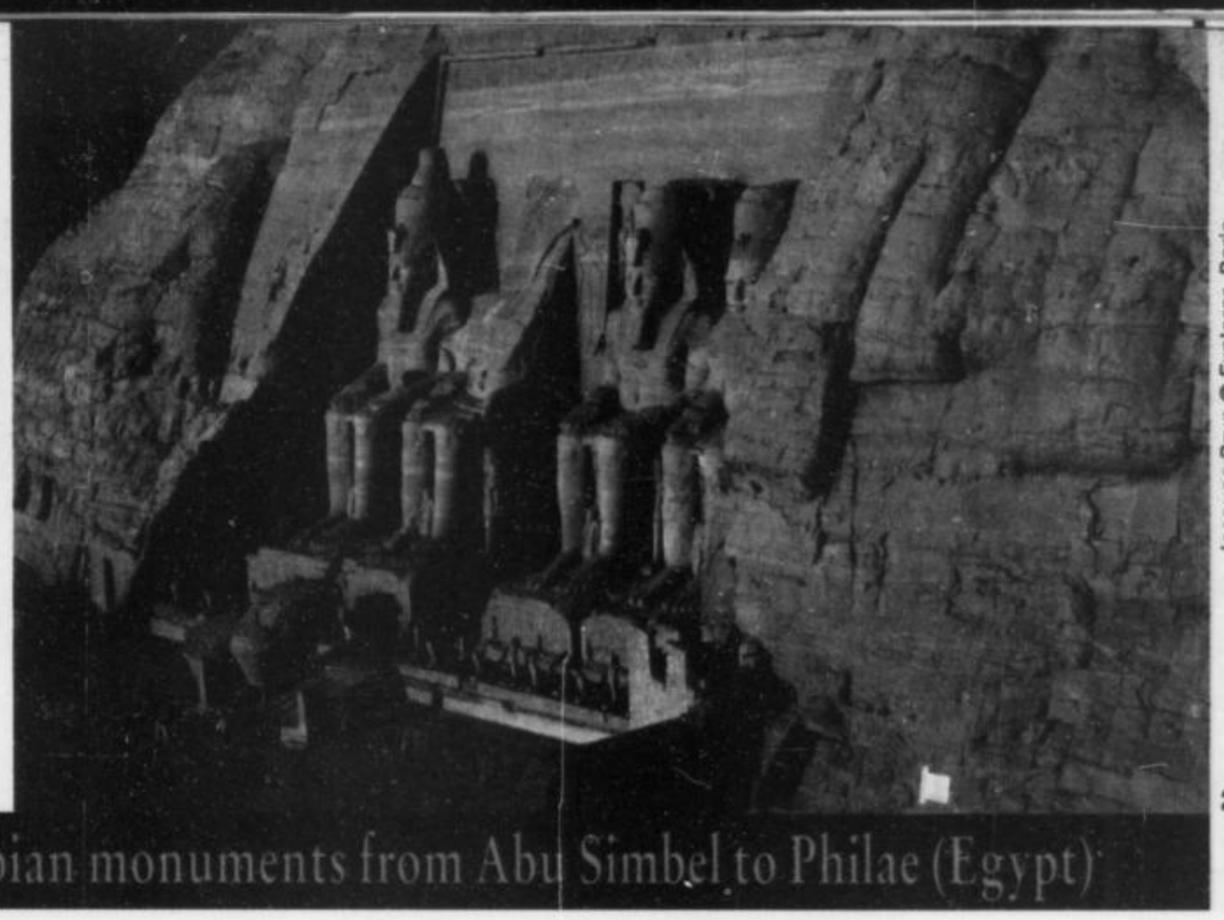
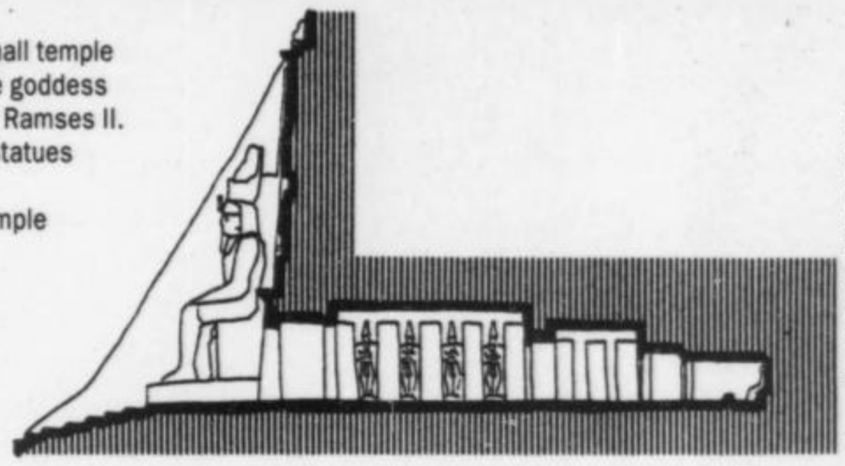


Jacques Brun © Explorer, Paris

2

The Nubian monuments from Abu Simbel to Philae (Egypt)

1. Detail of the façade of the small temple of Abu Simbel, dedicated to the goddess Hathor and to Nefertari, wife of Ramses II.
2. Façade of the main temple. Statues of Ramses II.
3. Cross-section of the main temple of Abu Simbel.
4. Inner sanctum of the main temple. From left to right: Ptah, Amon-Re, Ramses II and Re-Horakhte.
5. Inside the main temple.



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Conquered around 1550 B.C., Nubia (especially the area around Aswan) became a strategic strongpoint of Pharaonic Egypt. The open-air museum of Nubia and Aswan comprises the temples of Abu Simbel, hewn from the rock by order of Ramses II in the fourteenth century B.C., the great temple of Isis and a complex of several temples built between the fifteenth century B.C. and the second century A.D.
Placed on the World Heritage List in 1979

The rock churches of Ivanovo (Bulgaria)

Situated on the banks of the Russenski Lom River, the monastery complex of Ivanovo consists of churches, chapels and cells which were hewn from the rock between the restoration of the independence of the Bulgarian church in 1235 and the annexation of Bulgaria by the Ottoman empire in 1396. Frescoes, which originally covered the walls of almost all the churches and chapels, illustrate the development of the school of Tarnovo (capital of the second Bulgarian kingdom) and, more generally, of Bulgarian and Byzantine art.
Placed on the World Heritage List in 1979

UNESCO/P. Ilieva

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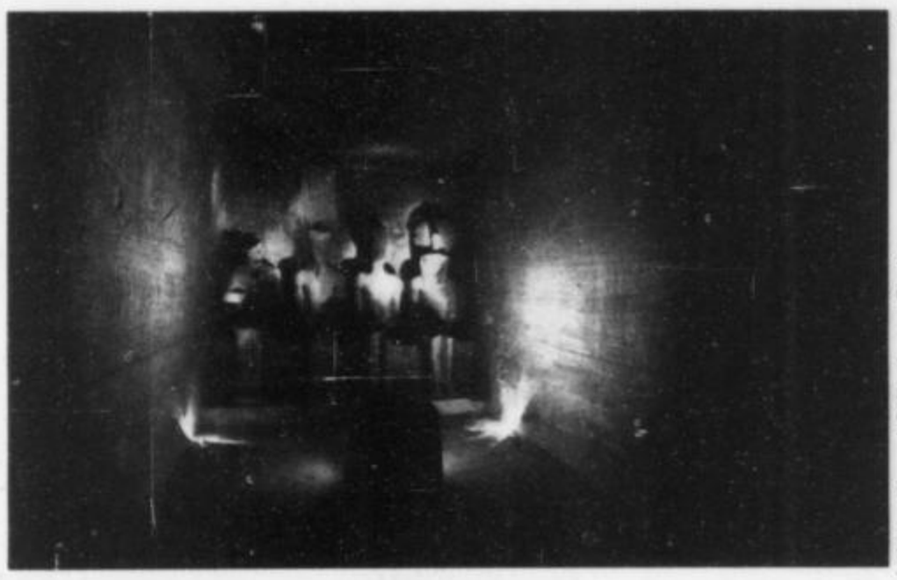

Didier Dorval © Explorer, Paris.

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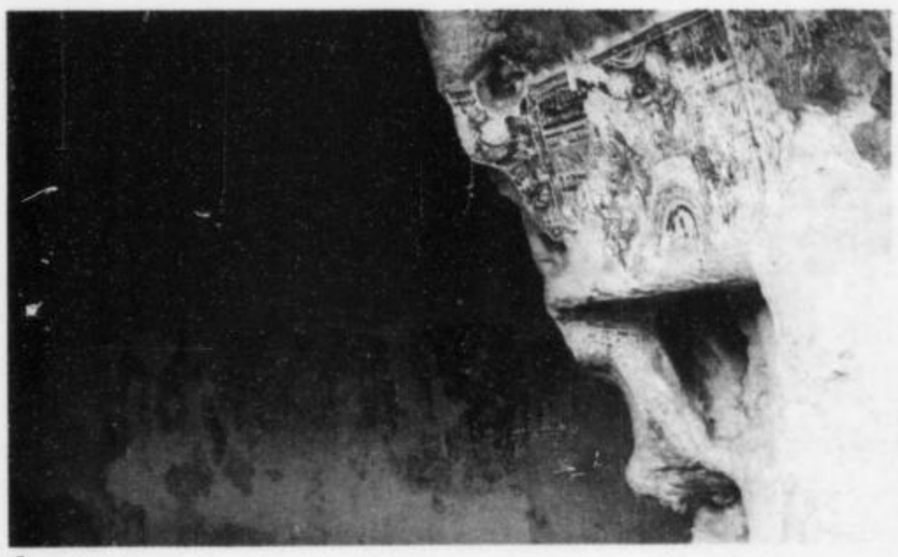

UNESCO/P. Ilieva

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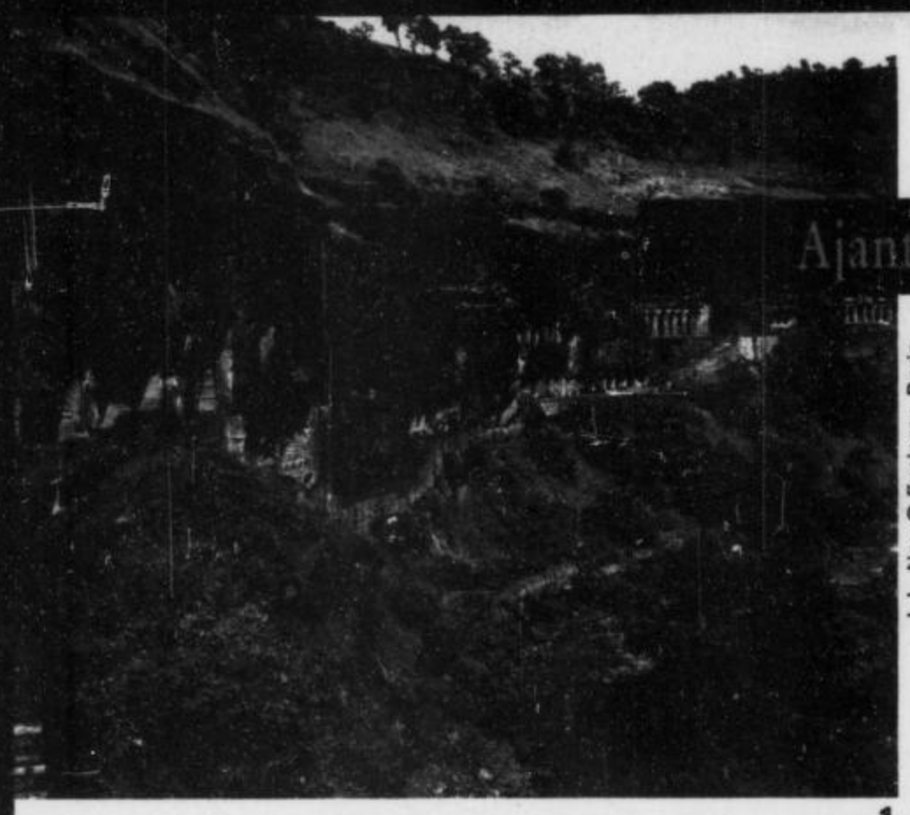
© J.-P. Forget, Maurepas

5

1. Natural site and spiritual centre.
2. A natural cave modified by human hand.
3. Figures are portrayed in the Ivanovo frescoes with a sense of drama that relates them more closely to Hellenistic than to Byzantine art.
4. After centuries of damage, the frescoes of Ivanovo now offer only a few tantalizing glimpses of medieval Bulgarian art.

Ajanta Caves — Ellora Caves — Elephanta Caves (India)



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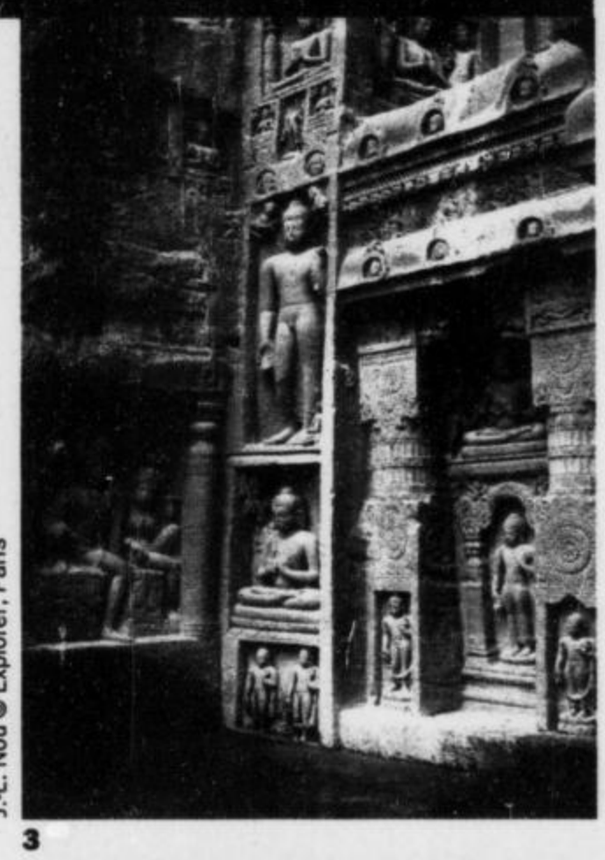

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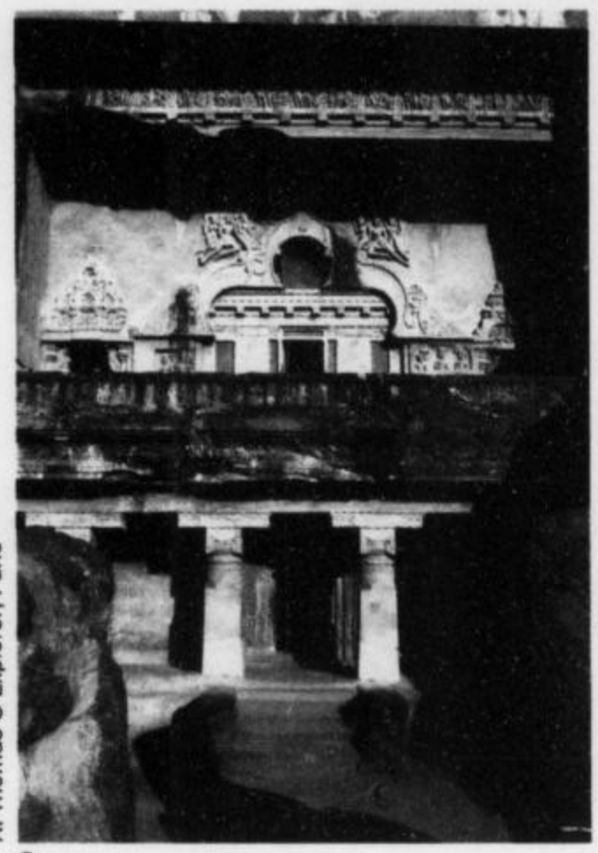

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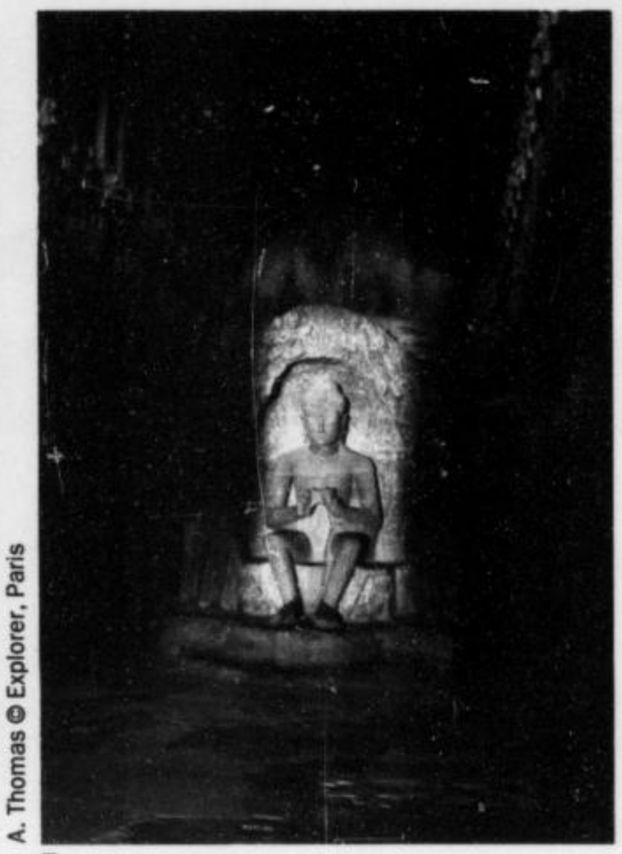

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AJANTA
1. General view of the cliff.
2. Cave No. 1. The Vakataka period (3rd-5th centuries A.D.).
3. Façade of cave No. 19.

ELEPHANTA
4. The temple (6th-8th centuries A.D.).
5. Three-headed Shiva.

ELLORA
6. Entrance to cave No. 10.
7. The sanctuary of Visvakarman (cave No. 10). The caves receive the light of the setting sun.

■ **Ajanta** ■ Hewn from a cliff overlooking a bend in the Waghora River (Maharashtra State), the thirty Ajanta caves include five Buddhist sanctuaries and monastic annexes. The first group of caves were made in the second century B.C. on a basilical pattern in which the main nave is separated from the aisles. A second group was hewn out between the fifth and seventh centuries A.D., during the Vakataka and Gupta dynasties. Abundant statues and wall paintings mark one of the highest points of Indian art.
Placed on the World Heritage List in 1983

■ **Ellora** ■ Unlike Ajanta, Ellora is the product of three great religions of ancient India. Thirty-four caves hewn from a high basalt cliff on a two-kilometre-long site in Maharashtra state contain Buddhist, Brahmanic and Jainist temples and monasteries. The oldest date from the seventh century and the most recent were probably made between 800 and 1000 A.D.
Placed on the World Heritage List in 1983

■ **Elephanta** ■ The Elephanta Caves, on the little island of Gharapuri, offshore from Bombay, are divided into two groups. The main site contains five Hindu rock-hewn sanctuaries which embody many features of traditional architecture. The sculptures in the main cave which surround the chapel containing the lingam (phallic symbol representing the fertilizing aspect of Shiva) are among the most important of their kind dedicated to the cult of Shiva. They have been approximately dated to some time between the sixth and eighth centuries A.D.
Placed on the World Heritage List in 1987

The Bandiagara Escarpment ('Dogon Country') (Mali)

1. A Dogon village built on rock. Alongside the rectangular houses are grain stores with conical thatched roofs.
2. A natural cave once modified for human habitation.
3. The entrance to a religious leader's dwelling, protected by a carved snake.
4. The houses are built of dry stone or unbaked clay bricks. The walls are coated with clay.
5. Traditional houses clinging to the cliff face.

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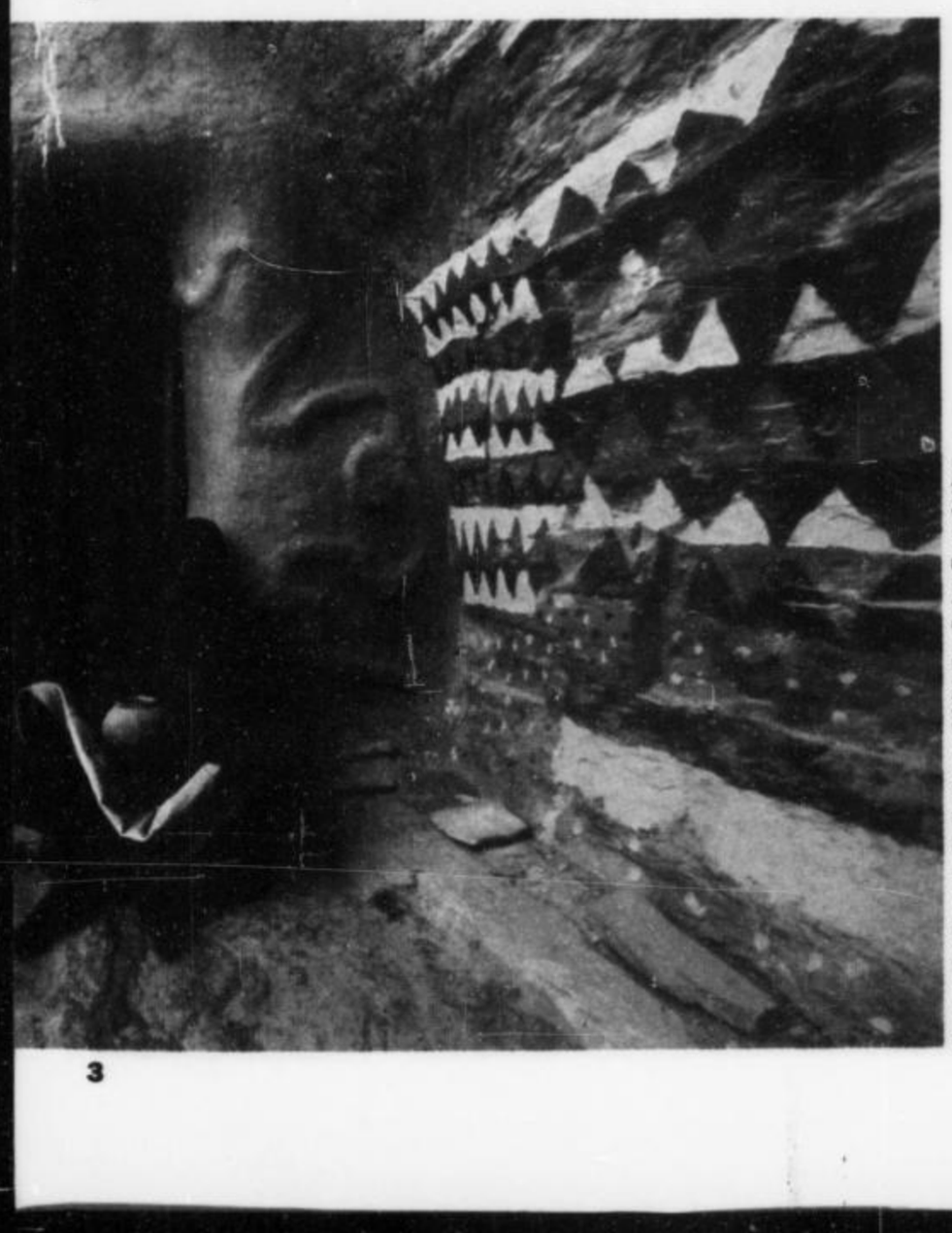

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Covering an area of some 400,000 hectares, this site includes almost 250 traditional villages of the Dogon people, most of which huddle against the cliff. The Dogon, a people formed about 800 years ago from the intermingling of tribes which had been chased from Mandé with the local Tellem people who lived in caves and rock shelters, preserved a number of their predecessors' rock sanctuaries. They later developed a form of social organization which was reflected in their architecture.
Placed on the World Heritage List in 1989

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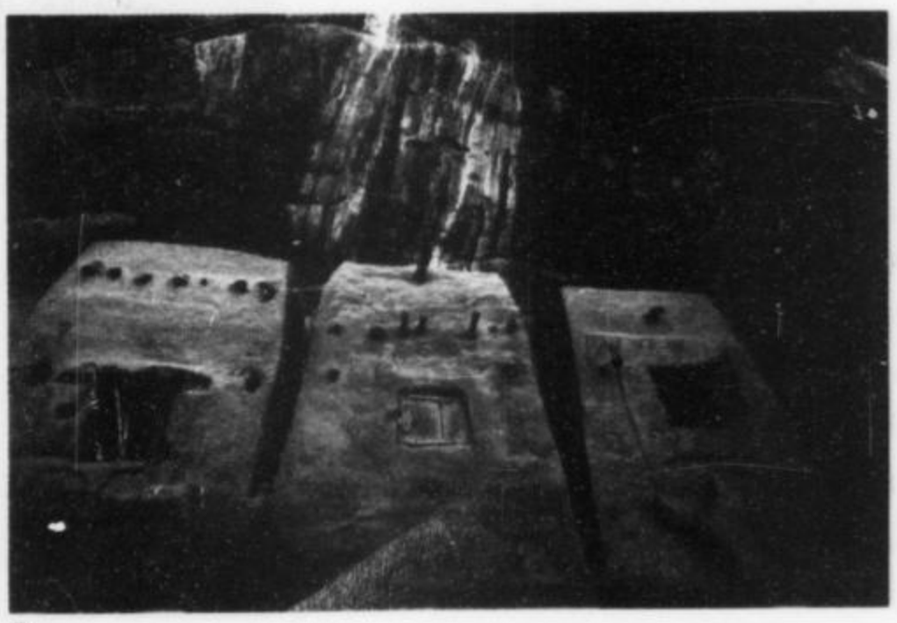

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Photos © Alfred Wolf. Heritage 2001./La Caixa Foundation

The rock cones of Çappadocia (Turkey)

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Klaus Bossemeyer © Studio X, Paris

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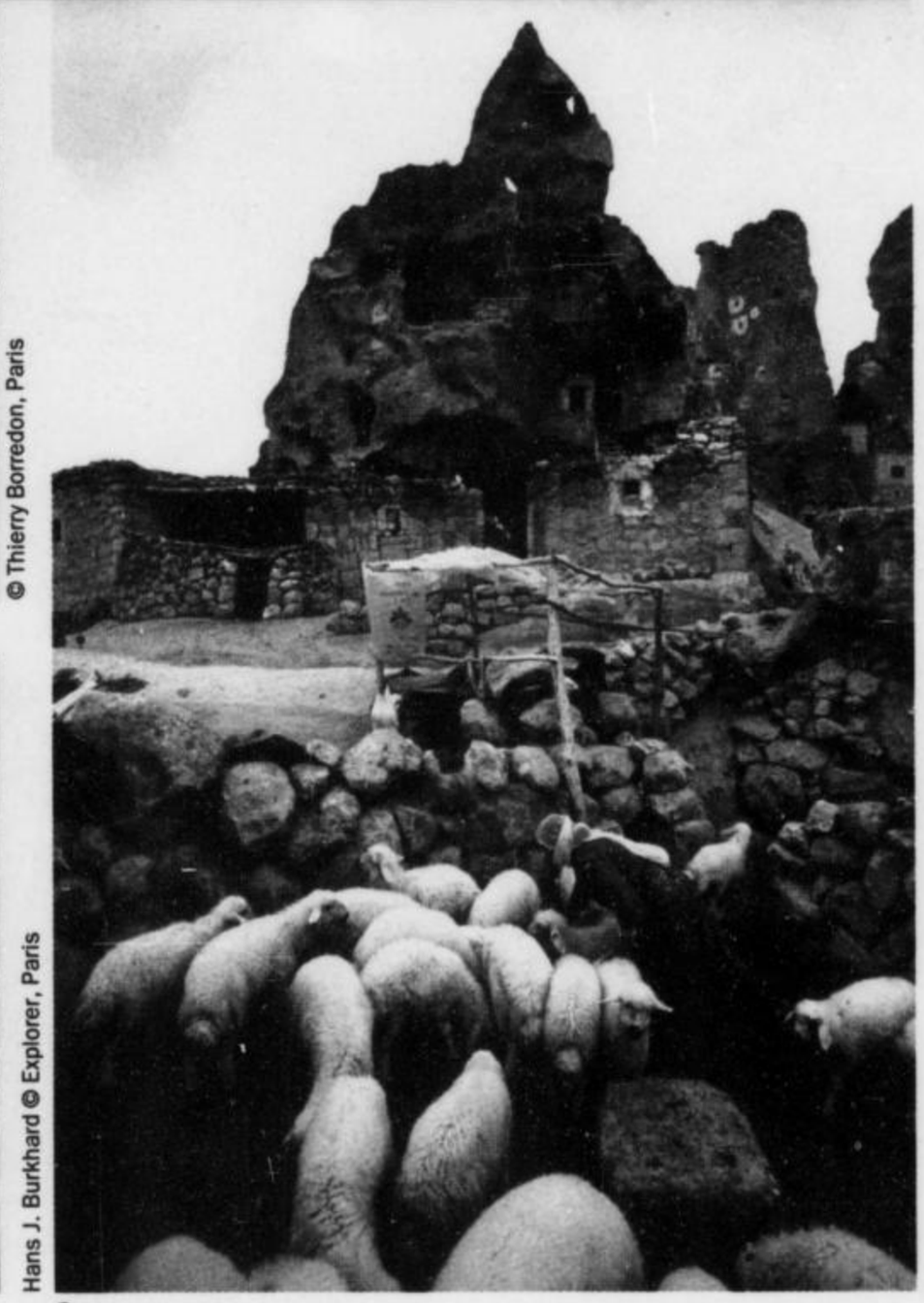
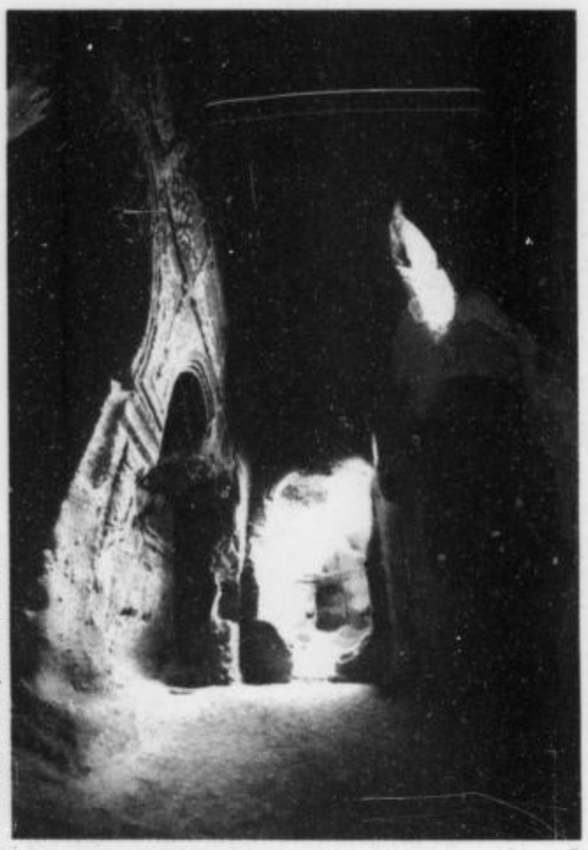


Hans J. Burkhard © Explorer, Paris

3

1. Landscape of Cappadocia, in the heart of Anatolia. The site was created from a massive flow of lava from Mount Argaeus.
2. Volcanic cones topped with dovecotes.
3. A troglodyte dwelling still in use.



R. Nowitz © Explorer, Paris

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Delaborde © Explorer, Paris

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D. Guilloux © Ask Images, Paris

6

As early as the fourth century A.D. Christian anchorite communities took shelter in the unusual conical peaks sculpted by erosion in the heart of Turkey's Anatolia region. They began creating troglodytic villages to protect themselves from Arab invasions, and by the middle of the ninth century stone churches were being gouged from the soft rock and richly decorated with figurative painting.

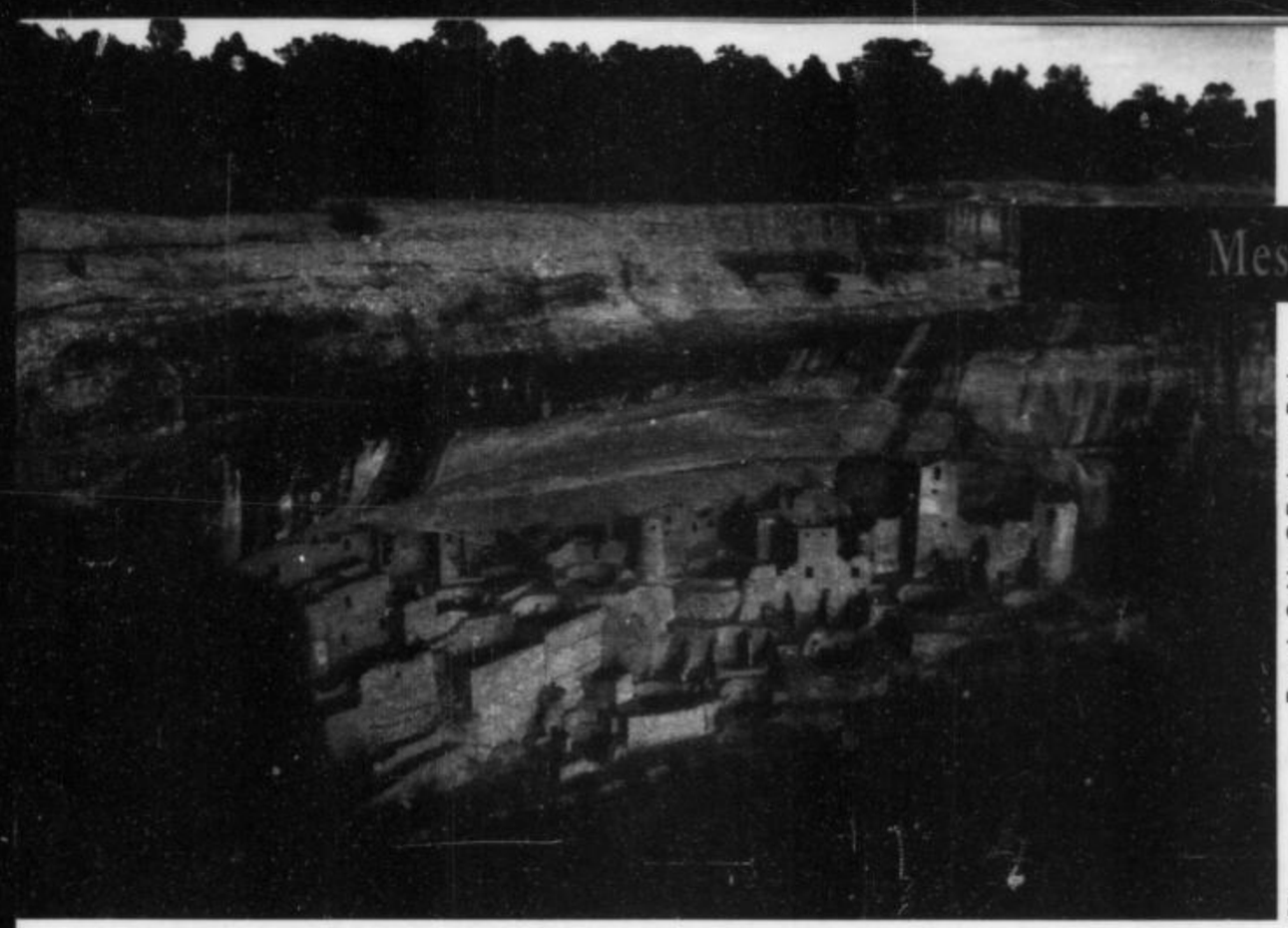
Placed on the World Heritage List in 1985

4. The king's palace in the underground city of Ozkonak.
5. A rock-hewn Byzantine church, Göreme Valley.
6. Zelve Valley.
7. Rocky pyramids in Göreme Valley.

© J.-P. Forget, Maurepas

7

Mesa Verde (United States of America)

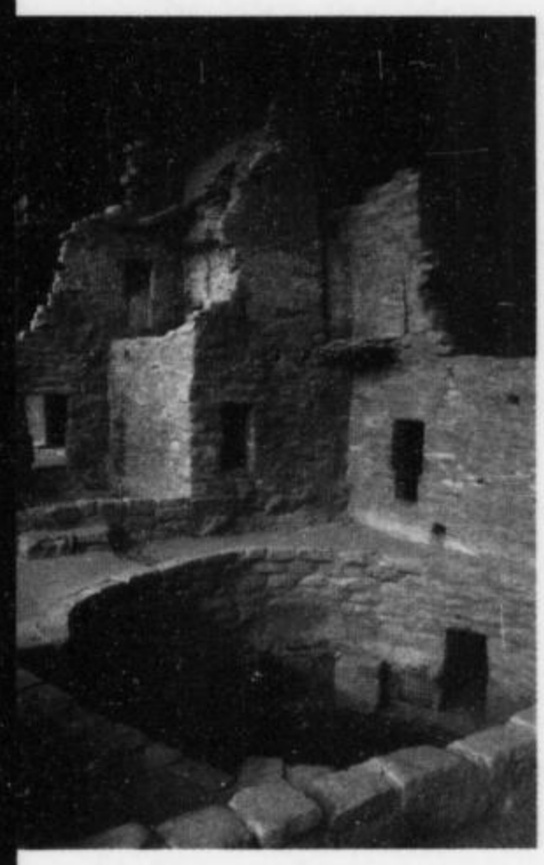


Francis Gohier © Explorer, Paris

1

The traditional habitat of the Anasazi Indians appeared in the sixth century A.D. in the form of partially buried villages on the high table-land of Mesa Verde (Colorado). From the eighth century on it developed in the form of villages that were partly troglodytic and partly built above ground. Buried structures known as *kivas* were made and were used for various cultural activities. The civilization of the Anasazis, to which the Pueblo Indians belong, reached its zenith between the twelfth and thirteenth centuries. At the end of this period the surface villages were abandoned and the Indians settled in more rudimentary defensive buildings huddled against the sides of the canyons.

Placed on the World Heritage List in 1978



Christophe Boisvieux © Explorer, Paris

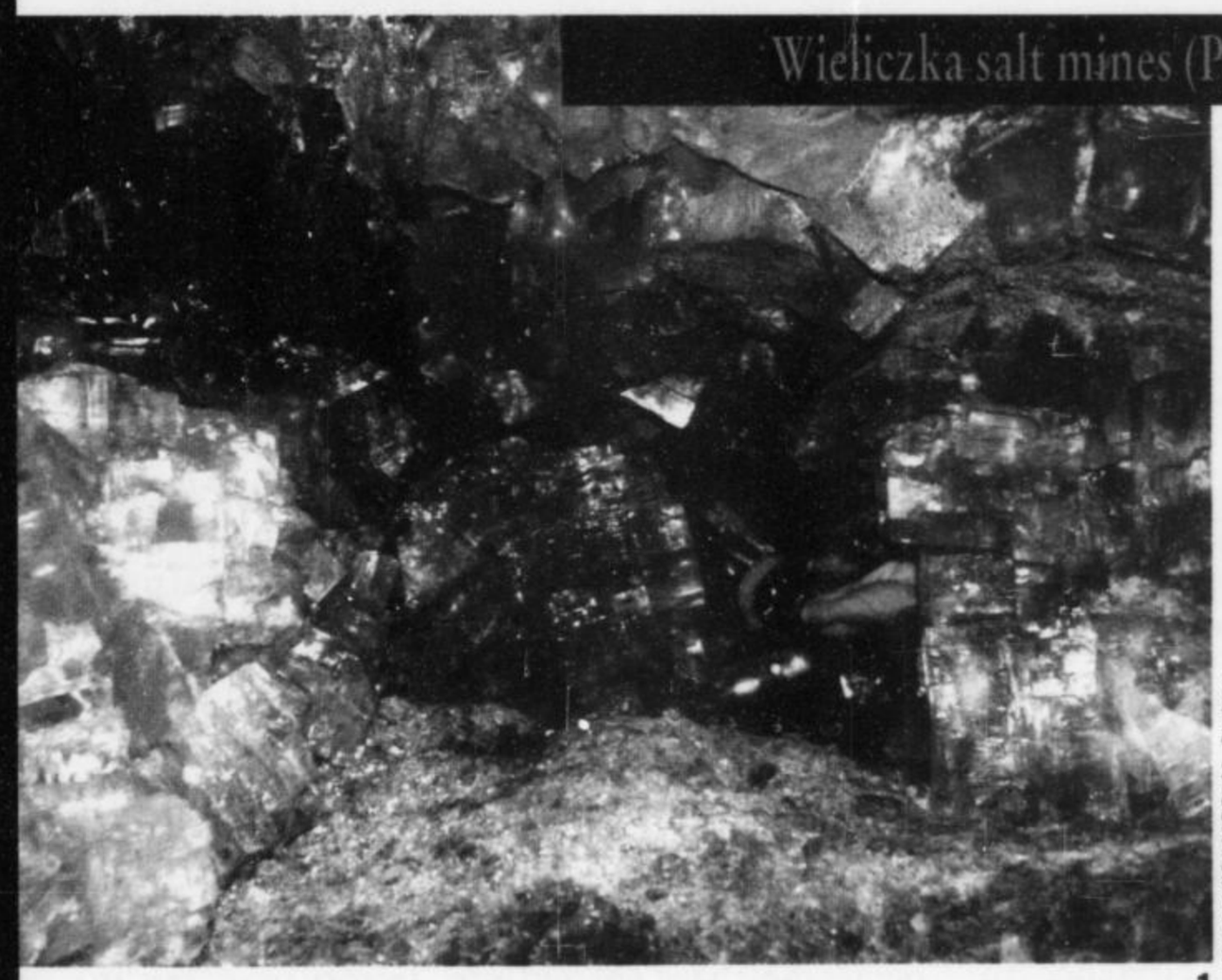
2

© Charles Lenars, Paris

3

1. At the end of the 12th century the Anasazi Indians abandoned the table-top mesas to establish new dwellings in the sides of canyons.
2. The "Spruce-Tree House".
3. The Cliff Palace, built with stones taken from the cliff.

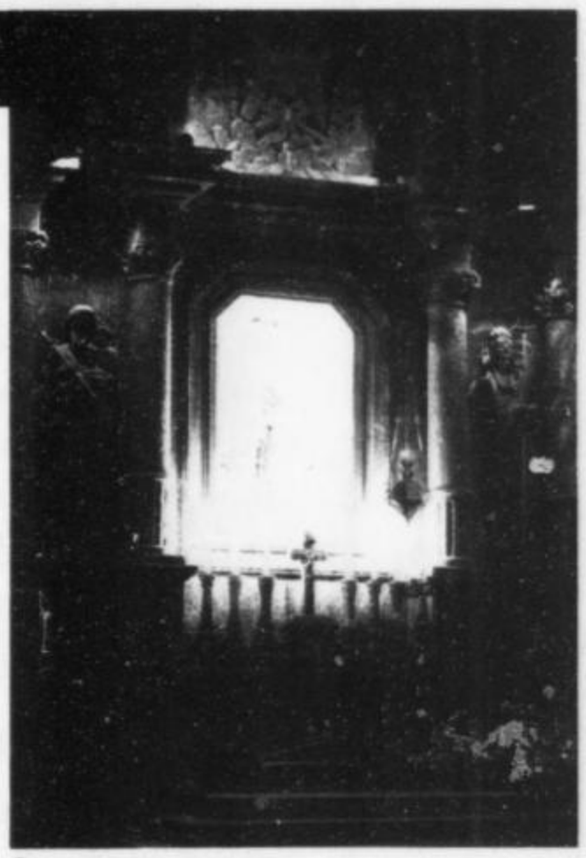
Wieliczka salt mines (Poland)



Unesco/ICOMOS. M. Stelzer

1

1. The "cave of crystals".
2. Kinga Chapel, hewn and sculpted from the rock salt.
3. This 162-step stairway, whose existence was recorded for the first time in 1669, climbs from the first to the second level of the mine via a 27-metre-high cavern.



Unesco/ICOMOS

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Unesco/ICOMOS

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Underground mining of rock salt deposits began in the thirteenth century, and in the course of time galleries were opened up on nine levels, to a maximum depth of 327 metres. Their total length, including wells, corridors, labyrinths, excavations and rooms is nearly 300 km. The old galleries strikingly illustrate the evolution of mining processes over the centuries. Underground chapels are adorned with altars, pulpits and statues carved out of salt.

Placed on the World Heritage List in 1978

UNESCO/Inès Forbes

COMMENTARY BY FEDERICO MAYOR

SCIENCE THAT MUST BE SHARED

Science is a product of intellectual work by persons trained in reflection and analysis to venture beyond what is already known. This exercise in thinking requires a minimum number of conditions, the most important of which under present circumstances is freedom. For although scientific progress was possible in the past when political and social contexts were under threat, the growing complexity of research and scientific development today require a high level of freedom in order to keep moving forward. As a result, the future of science is closely bound up with the advance of democracy and respect for values conducive to the free circulation and discussion of ideas.

Contrary to the fears of Alexis de Tocqueville and other nineteenth-century thinkers, democracy has not built a kingdom of mediocrity inimical to the development of higher forms of art and science. Rather, the opposite has occurred. The vitality and creative force of democratic society—in which the state is secular, powers are separated and all ideas are subject to debate—have turned out to be much greater than its early critics imagined. These qualities have not only enabled it to surmount the danger posed by various forms of totalitarianism but also to promote unprecedented cultural and economic development.

An unexpected turn of events

However, on the threshold of the twenty-first century, the nature of the challenges and threats with which democracy has to cope is changing. Since 1989, the end of the Cold War has given new emphasis, and in some cases greater virulence, to old disputes of ethnic or religious origin that had survived under wraps in the shadow of the East-West confrontation. It is quite clear that they are not the consequences of freedom but the result of many years of oppression. The triumph of democratic principles in Eastern Europe, the break-up of the Soviet empire and the nuclear weapons reduction agreements have opened up broad vistas of peace while at the same time releasing resentments and twisted perceptions long harboured in the secret places of the heart.

The countries of the free world had prepared for war, but not for peace. They were surprised when the course of events diverged from what the prophets of doom had predicted. The iron curtain was soon a thing of the past; peace was achieved in Namibia, El Salvador, Mozambique, the Middle East and South Africa. Conflicts were no longer international but *intra*national. The threats to security are now poverty, the unbalanced distribution of resources, runaway population growth, massive emigration and social injustices that create reactions of rejection.

This turnaround caught out some countries which had little inclination to take radical decisions, looked no further than the next elections and regarded any reference to future generations as an irritation. Their budgetary and productive priorities, social organization and defence structure are geared to the threats of the past but are unsuitable for tackling the problems of the future. The examples of Bosnia, Somalia and Rwanda underscore the inability of the international community to solve new, "low-intensity" post-Cold War conflicts.

An intolerable situation

The individual and collective violence that constitute the seedbed of war can take many different forms. In politics it manifests itself as oppression and tyranny; in economics, as exploitation and destitution; and in society, as exclusion and intolerance.

Every effort to establish a culture of peace must take into account these deep roots of human conflict and give priority to the transmission of values, the forging of attitudes and the drafting of legal provisions to replace those of the declining culture of war. The pillars of this undertaking are education and development, which make it possible to eliminate the most dehumanizing aspects of extreme poverty, and to contribute to the elimination of discrimination and the establishment of governments that respect the will of the people and the agreements they have entered into. Twenty years ago, in 1974, the industrialized countries undertook to promote the development of the less privileged countries by allocating to them 0.7 per cent of their GDP (keeping 99.3 per cent for themselves!). With a few praiseworthy exceptions—the Nordic countries in particular—they have not honoured their undertaking.

Worse still, the meagre "development assis-

tance" on offer sometimes included military equipment. As a result, there has been no endogenous development in most of the countries in question. Foreign debt and the maroeconomic structures put in place have led to an intolerable situation that has nevertheless been tolerated for years: the poor countries are paying the rich! Millions of people drawn by "city lights" are fleeing the poverty of rural areas to go and live in the squalid, crowded solitude of the major urban centres. One day, helpless and desperate, they will head north. How easy and wrong it is to deplore radicalism and extremism where poverty, marginalization, exclusion and ignorance have been allowed to proliferate.

The idea that development is synonymous with economic growth has long been superseded. Nowadays, the ethical and social problems arising from scientific and technological progress brook neither delay nor evasion. When UNESCO speaks of the need for development with a human face—integrated, endogenous, sustainable, supportive and environment-friendly—it is merely complying with one of its basic precepts: the duty to act as the conscience of the United Nations system in a world that hesitates, in the presence of powerful interests and forces of inertia, to take the new directions that, at the dawn of a new millennium, are morally inescapable.

The responsibilities of the scientist

Scientific knowledge in the basic disciplines (mathematics, physics, chemistry and biology) is now centred on half a dozen lines of inquiry that will certainly change the character of society in the twenty-first century. Broadly speaking, this work is organized around ecological problems and the search for alternative sources of energy; optic fibres and superconductors; lasers and work relating to space technology; and research in biology, especially genetics and biotechnology.

Those who are taking scientific knowledge forward in these areas, like many of their colleagues working in other sectors, bear the awesome responsibility of informing public opinion and those who shape it about the potential risks of the application of knowledge, and of explaining the constantly changing instruments that science devises to cope with those difficulties. But if the scientists' words are to fall on receptive ears and their conclusions on fertile soil, steps must be taken to strengthen exchanges of communication and influence between the centres of knowledge and power, and between researchers and leaders in all political and social spheres, especially at municipal level.

While municipal and regional authorities have in the past needed architects, hydraulic engineers and communication experts, from now on they will also need the services of environmental specialists to help them preserve soil quality (through the appropriate "scientific" use of artificial fertilizers), to encourage the recycling of natural products and improve public health by suitable waste processing, to avoid air and water pollution, to protect biological diversity and to safeguard the historical heritage. This aspect of the scientist's task is particularly urgent in the most highly developed countries which, in almost direct proportion to their productive capacity, are the greatest producers of toxic wastes.

One of the tragedies of the contemporary world is the dearth of activity in applied science compared with the enormous volume of accumulated theoretical knowledge. Laboratories and universities in the industrialized world are bursting with knowledge that could alleviate the misery of millions of human beings, but the means of applying that knowledge are not available, although the more discerning countries are beginning to realize that, in the final analysis, their own security is at stake. For example, there is no AZT for many Aids sufferers in Africa. Imagine the sense of injustice and marginalization that these patients for whom there is no medicine must feel.

If I have dwelt on the social impact of scientific work, it is because I am convinced that this is one of the decisive parameters of the century that is about to begin, because I believe that there are solutions that can be applied. When my official responsibilities take me to a school in the heart of the African forest, a research centre in Siberia or an archaeological site in South America, I always meet enthusiastic young people who are giving of their best—sometimes under conditions of extreme hardship—in order to secure peace and collective welfare. These young people look to the "intellectual and moral solidarity" enshrined in UNESCO's Constitution as the key to human dignity. For this reason, I repeat on each of my journeys that "there is only one really pressing need, and that is to share". It is the saying that one of the great religious figures of our time, Abbé Pierre, keeps on his modest desk and it is a motto that should govern our daily life.

Of the principles proclaimed by the French Revolution in 1789—Liberty, Equality, Fraternity—the first inspired the great political and social transformations of the nineteenth century while the second, the egalitarian ideal, dominated the twentieth century after the Russian Revolution. But the culture of war in which they developed prevented them from producing all the benefits that had been anticipated. Let us strive, with scientists in the vanguard, to make the third of those principles, Fraternity, the historic driving force of the twenty-first century, the mobilizing ideal of the culture of peace, whose first page is waiting impatiently for us to trace the outline, in unison throughout the world, of the most novel yet ancient solution of all times, the only one on which we will be judged at the end of the day: love. ■

Protecting plant life

by France Bequette

Alain Le Toquin © Jacana, Paris

A botanist pollinating a *Hibiscus boryanus*.

Marie-Claire Noailles © Jacana, Paris

Young Hottentot fig plants (*Carpobrotus edulis*).

The first European Conference on the Conservation of Wild Plants was held in September at Hyères (France), at a time when 25,000 wild plants are threatened with extinction. The Conference, entitled "Planta Europa", was co-sponsored by Plantlife, a charity dedicated to saving wild plants, and by the French Ministry of the Environment. It was attended by 200 experts from thirty European countries

In his inaugural address, the well-known British botanist and environmentalist David Bellamy, president of Plantlife, noted that plants have for too long been too low on the list of conservation concerns. "Pandas may reign supreme as the logo for the World Wide Fund for Nature (WWF)," he said, "but as every schoolchild will tell you they are totally dependent on bamboo both for their habitat and their staple diet."

THE THREATS

David Bellamy went on to list the "seven deadly sins that threaten the flora of Europe" as "changes in land use practice including: 1) extensive and intensive farming based on ever larger fields and the reseeding of meadows and pastures with nitrogen-hungry monocultures; 2) the replacement of the rural work force, crop rotation, fallow and mixed farming by machines and an armamentarium of chemicals; 3) the eutrophication of water due to the excessive use of fertilizers and intensification of animal husbandry including the foddering of sheep and cattle on heath-, moor- and bogland; 4) drainage on a massive scale including the loss of water meadows and farm ponds; 5) road-building dissecting viable populations of plants and the animals and insects

Alain Le Toquin © Jacana, Paris

Seed preserved in cold storage at the Botanical Conservatory in Brest (France).

which depend on them and upon which they depend; 6) acidification due to the increasing use of fossil fuels and the replacement of native woodlands and coppice with exotic conifers; 7) overgrazing by sheep, cattle and other herbivores."

The some 12,000 species of flowers and ferns in Europe are also under threat from environmental degradation due to the intensification of farming, industrial and urban expansion, the growth of tourism and uncontrolled extraction of natural resources. Twenty-five higher plant and fern species no longer exist in their wild state, and many more have been reduced to a very small number of specimens. The situation is particularly worrying since the distribution of biological diversity worldwide is irregular. Europe is responsible for several plant-life territories of worldwide interest in such areas as the Alps, the Pyrenees, the Spanish mountain chains, the Balkan mountains, the Mediterranean basin and its islands, the Canaries and the Azores.

The first thing that must be done is to catalogue all the world's plant species, and this will be a long, costly and complicated job. In Europe, for example, botany as a discipline has lost much of the prestige it once had, except in Spain where there are a number of top-level botanists. It is gradually being overshadowed by disciplines such as molecular biology. Some wags have even begun to wonder whether present-day researchers, with their eyes glued to electronic microscopes, could tell a field of barley from a field of wheat!

THE RESPONSES

And yet international legal tools to protect plant life do exist. The Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) came into force in 1982 in more than 130 countries. And Europe's wildlife and environment have been protected by the Bern Convention since 1979. Despite these regulations, however, indigenous plant populations are still being plundered to meet the demands of the horticulture business. In the 1980s Southern Europe and Turkey exported between 50 and 70 mil-

lion bulbs per year, mainly to the Netherlands but also to the United Kingdom and Germany.

The best way to protect plants in their natural habitats is to establish protected areas. According to two French experts in natural resources, Matthieu Glachant and François Lévêque, there are a total of 4.85 million km² of such areas, covering 3.7 per cent of the earth's land surface, including biosphere reserves, parks and natural reserves of all sizes. But it is difficult to provide proper protection in densely populated regions. It would be a pity if we could no longer see wild plants growing in nature and had to look them up in dried plant collections, even collections as rich as those in Geneva (5 million specimens) and Vienna (3.8 million).

Botanical gardens and seed or pollen banks provide for the conservation of plants outside their natural habitat. A Council of Europe study published in 1994 notes that the world's 2,500 botanical gardens play an important role in scientific research and in the conservation of endangered species, and that it is in them that the greatest variety of plant species—roughly 80,000—are found outside natural ecosystems. Using specimens grown in botanical gardens many countries, including Australia, Russia and the United States, have created national data banks for rare or endangered indigenous plants. "Red Books" compiled by some countries on their endangered plant life are also valuable conservation tools. Extremely rigorous techniques must be used for collecting, freeze-drying or vacuum storage of specimens in seed and plant tissue banks. But in France, for example, such facilities have been instrumental in restoring to life a certain variety of club moss of which only one sterile fragment had survived.

This raises the problem of how far a plant population or its habitat should be modified to ensure the survival of the species. Take, for example, the narcissi that grow on the Glénan group of islands off France's Brittany coast. They were dying out, partly through being trampled on by tourists and partly because their bulbs were being removed. Their habitat was fenced off to protect them, but trees and bushes grew and smothered the flowers. A solution was found by introducing sheep, which do not eat narcissi. The introduction of foreign plants can also pose problems. A pretty flowering plant called the Hottentot fig (*Carpobrotus edulis*), originally from South Africa, is spreading along the coasts of the Mediterranean and California and smothering endemic plants. After rashly introducing St. John's Wort into their country, Australians had to import an insect that preys on this invasive plant. Australians are also faced with the proliferation of gum succory (*Chondrilla juncea*), which originated in the Middle East and has such a tough stalk that it is difficult to scythe.

All the same it was reassuring to find out from the "Planta Europa" conference what naturalists are doing on a worldwide scale to protect wild plants, for plants are not only a source of pleasure but also potential food and medicine for tomorrow. ■

J.-P. Soulier © Jacana, Paris

The Royal Botanic Garden, Edinburgh (United Kingdom).

TO FIND OUT MORE:

- **Plantlife:** The Natural History Museum, Cromwell Road, London SW7 5BD. Tel: (19 44) 171 938 91 11; Fax: (19 44) 171 938 9112.
- ***World Plant Conservation Bibliography,*** Royal Botanic Gardens, Kew and the World Conservation Union (IUCN).
- ***Widening Perspectives on Biodiversity,*** A. Krattiger et al., IUCN, 1994.
- ***Principles and Practice of Plant Conservation***, David R. Given, IUCN, 1994
- ***L'enjeu des ressources génétiques végétales, Aspects scientifiques, écologiques et économiques*** Matthieu Glachant and François Lévêque with the collaboration of A. Bonjean, Les éditions de l'environnement, Paris, 1993.
- ***La biodiversité, enjeu planétaire. Conserver notre patrimoine génétique,*** Michel Chauvet and Louis Olivier, Le Sang de la terre, Paris, 1993.

FRANCE BEQUETTE is a Franco-American journalist specializing in environmental matters.

world... world... world... world... world...

Sylvain Cordier © Jacana, Paris

THE RHINOCEROS IS ALIVE AND (FAIRLY) WELL IN ZIMBABWE

The Pan-African News Agency (PANA) reports that in the last 18 months, the Zimbabwe Society for the Protection of the Rhinoceros has not registered a single case of poaching in the four protected sites it has established. When Zimbabwe became independent in 1980 the rhinoceros population numbered several thousands. Now there are only 300 left. Poachers sell rhino horns, which are used to make so-called aphrodisiac powder and as scabbards for swords, for as much as $US90,000 each. The Harare government has invested 500,000 Zimbabwe dollars (about $US62,500) to protect the survivors. ■

Jean-Louis Le Moigne © Jacana, Paris

A narcissus from the Glénan islands (*Narcissus triandrus*).

GLOBAL WARMING: A CLOUDY OUTLOOK

Researchers at the United States' National Center for Atmospheric Research (NCAR) in Boulder, Colorado, report that clouds absorb about four times as much solar energy as had been previously thought, and by using the new values have arrived at preliminary results that predict a warmer, drier climate than that shown previously. An NCAR study of the tiny particles that form the nuclei of cloud

Faulkner D/PHR © Jacana, Paris

droplets and raindrops suggests that the burning of tropical forests may be the largest source of these particles, other cloud condensation nuclei being dust and sea salt. The increase in nuclei could result in a decrease in rainfall. ■

WENO'S RISING TIDE OF WASTE

About 17,000 people live on Wendo Island, capital of Chuuk State (Federated States of Micronesia). Weno, whose area is just under 20 km², has a serious solid-waste problem. Because of a quarrel between land-owners and the government about land use, the existing disposal site has been closed. When a representative of the World Health Organization (WHO) visited Weno last year, he found that there was no public service for the collection of solid waste, so that people had to transport their waste to the public dump themselves. However, since neither the dump nor its access road are well-maintained, illegal dumping has increased. Even with the road in good repair, a new site will have to be opened up sooner or later. But where? Weno's waste disposal problem is one being faced by many communities all over the world. ■

DONKEYS FIGHT BATTLE AGAINST DUNES

The June 1995 issue of the French magazine *Sécheresse* contains an article co-authored by Professor Pierre Rognon of Paris and Jean Meunier, an agronomist living in Mauritania, describing how the latter has developed a simple, effective and inexpensive way of halting desert advance. Saplings are planted in wire-mesh cylinders wrapped in plastic bags, and are watered at root-level via a system of buried plastic bottles linked to a bottle acting as a funnel from the surface. After 6 months, the saplings are 2.5 metres tall, enough to stabilize the sand. The cheapest way to bring in the water is on donkey-back, and Meunier has developed a rubber sandal to increase the bearing surface of donkeys' hooves and prevent them from sinking into the soft sand. ■

© P. Rognon, Paris

ONE WOMAN, MANY TREES

The 1994 annual report of Switzerland's Department of Development and Humanitarian Aid (DDA) tells the heartening story of Mariam Begum, of Bangladesh. Mariam, who never attended school and learned to read and write through an adult literacy programme, started a nursery on 280 m² of land lent to her by the state. Three years later she was working on an area ten times bigger. In 1994 she sold 10,000 trees and earned ten times the average Bangladeshi income. She hired a full-time employee, and her husband joined her business. Now Mariam has become a forestry consultant and plants trees for wealthy landowners. Because of entrepreneurs like her, more than two million trees have been planted in Bangladesh since the DDA-supported forestry programme was started nine years ago. ■

THE WATER HYACINTH STRIKES AGAIN

Burkina Faso is the latest African country (see *Unesco Courier*, May 1995, p. 47) to be threatened by the water hyacinth, a small, floating water plant with round leaves and beautiful pale-blue flowers. According to the Burkina Faso Botanical and Technological Research Institute, the hyacinth encourages evaporation. If it spreads to the dams of Kompienga and Bagré, the water supply of the country's capital, Ouagadougou, will be jeopardized. A media campaign has been launched in the national languages, calling on people to destroy the water hyacinth before the advent of the rainy season. If the campaign fails, it will cost several million dollars to get rid of the troublesome plant. ■

INITIATIVES

The European Environment Agency

The European Environment Agency was created in 1990 and became operational in 1993 when its headquarters were established in Copenhagen (Denmark). It is funded by the European Commission and by contributions from non-member states of the European Union such as Norway and Iceland. Although an offshoot of the European Commission, it operates independently, collecting information and distributing it upon request to the general public and to a network of "Topic Centres"—public or private member-state institutions concerned with the environment. Its first project was to develop and co-ordinate the European Environment Information and Observation Network (EIONET), to which more than 450 institutions belong.

The Agency's Multiannual work programme (1995-1999) comprises 93 projects. They give priority to areas such as air quality and atmospheric emissions; water quality; water pollutants and water resources; the state of the soil, of fauna and flora and biotopes; land use and natural resources use; waste management; noise emissions; chemical substances hazardous to the environment; and coastal protection.

Five Topic Centres are already acting as lead organizations for work in these priority areas. The Air Emissions project, for example, is being headed by the Umweltbundesamt in Berlin, and the Nature Conservation project by the Muséum Nationale d'Histoire Naturelle of Paris.

The Agency publishes a series of documents (mainly free of charge), including a monthly newsletter. One of these documents, *Europe's Environment, the Dobris Assessment*, published in 1994, is particularly remarkable. Illustrated with photos and diagrams, it presents in less than twenty pages a summary including some memorable figures. For example, two-thirds of Europeans live in urban areas covering 1 per cent of the total land area. A city of a million inhabitants consumes a daily average of 11,500 tonnes of fossil fuels, 320,000 tonnes of water and 2,000 tonnes of food and produces 25,000 tonnes of CO^2 1,600 tonnes of solid waste and 300,00 tonnes of wastewater. Tourism is one of Europe's most important social and economic activities: the coastal Mediterranean received 157 million tourists in 1990, and 100 million tourists visit the Alps each year. ■

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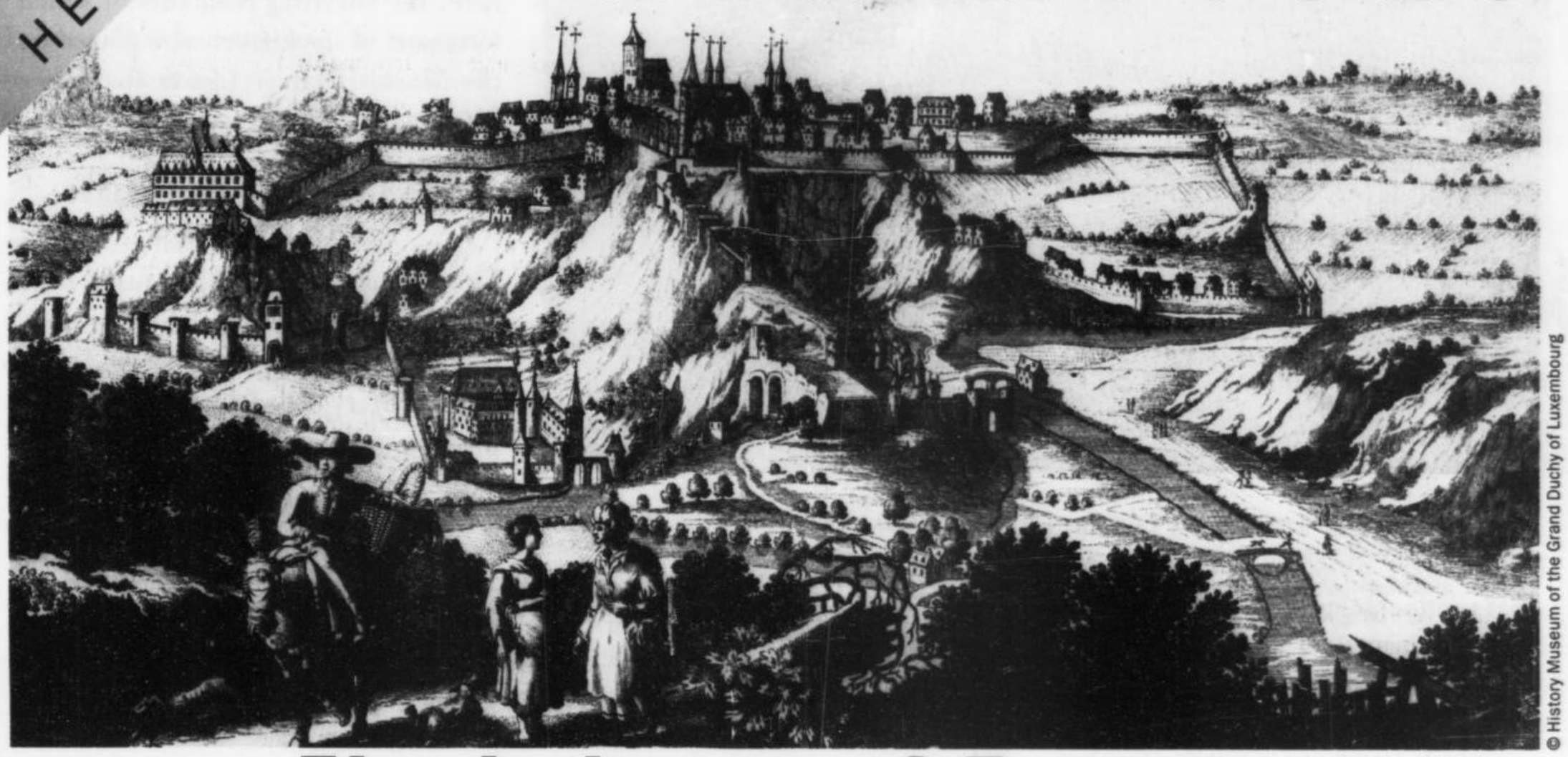
LUXEMBOURG



© History Museum of the Grand Duchy of Luxembourg

The balcony of Europe

by Jean-Pierre Kraemer

A pocket-sized international airport; a fast-expanding money market; a European centre which houses the headquarters of the Secretariat of the European Parliament and other European institutions such as the Court of Auditors, the Court of Justice and the European Investment Bank; a strategic crossroads where the history of Europe, from the Early Middle Ages on, has literally been carved in stone; the legendary spot where Melusina[1], wife of the city's founder Count Sigefroid, is said to hide—Luxembourg, capital of the Grand Duchy of Luxembourg, is all of these. Its inhabitants, who number fewer than 100,000, speak not only their native tongue Letzebuergesch (a Mosellan Franconian dialect), but French and German, and in many cases English and even Italian, Spanish and Portuguese. A good half of the capital's population is made up of foreigners.

CITY AND CROSSROADS

Located at the intersection of two Roman roads, one from Paris, the other from Lyons, on a rocky promontory between the two deep valleys of the Alzette and the Pétrusse, the site of the future city straddled the linguistic borderline between France and the Holy Roman Empire, in the heart of ancient Lotharingia. It was ideally suited to fortification.

A. Soldeville © Rapho, Paris

Capital of the Grand Duchy, Luxembourg City was coveted by the powers of western Europe for centuries. Since 1994 its old districts and fortifications have been registered on UNESCO's World Heritage List.

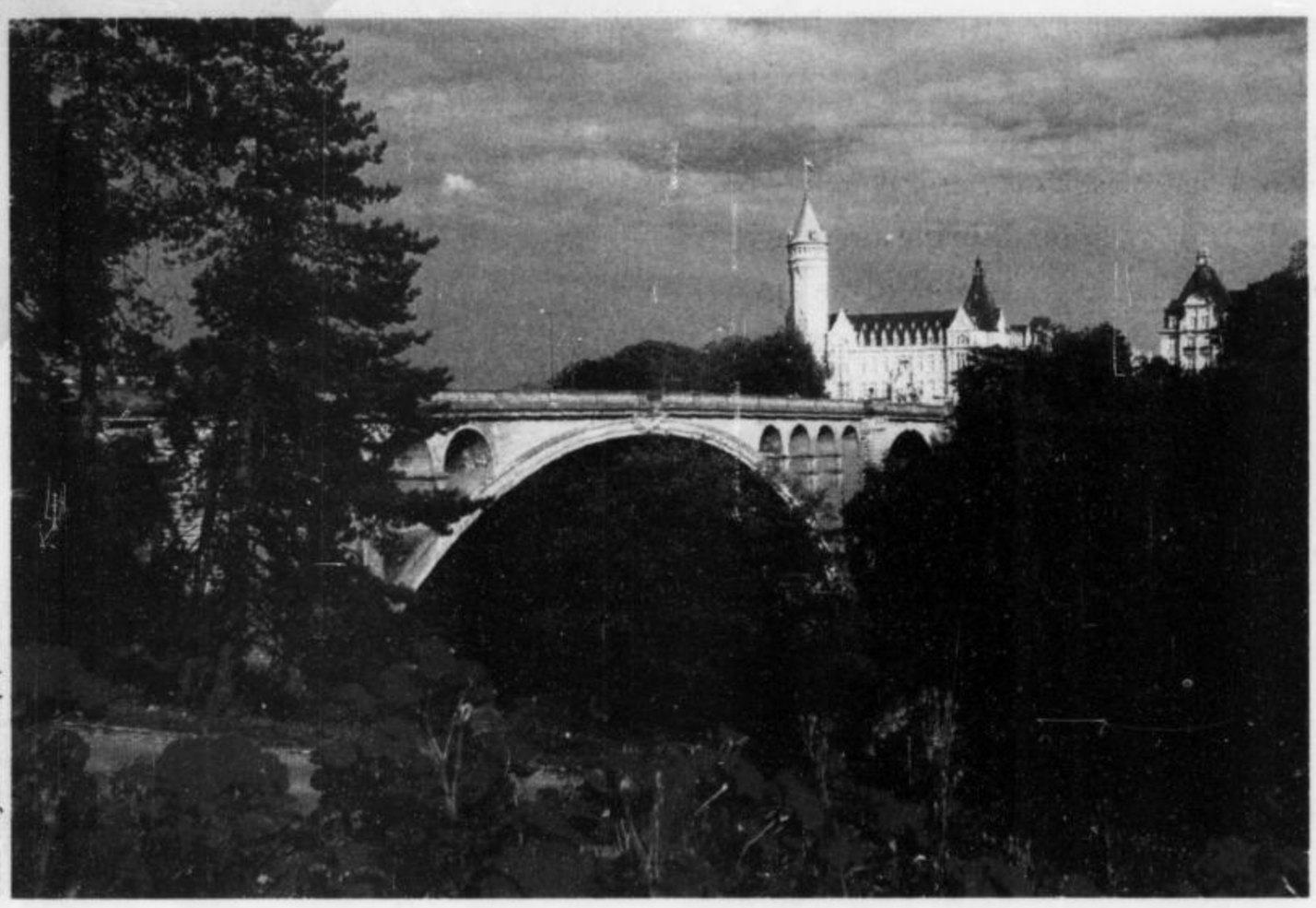
Top, Luxembourg as it was in the 17th century. A copperplate engraving by Frederik de Wit (1698).

Above, the Corniche and St. Michael's Church.

'THE GIBRALTAR OF THE NORTH'

In about 1000 A.D., on the site of a modest Roman fort called Lucilinburhuc, or Lützelburg ("little castle"), Sigefroid built a feudal castle which was to become the seat of the illustrious house of Luxembourg and the "Acropolis" of the future fortified town.

At the beginning of the fourteenth century the town had 5,000 inhabitants and enjoyed an economic boom thanks to its ideal location on the trade route between the two leading trading regions of the time, Lombardy and Flanders. Its third surrounding wall, known as Wenceslaus's Wall, which protected both the upper and lower towns, dates from the end of the fourteenth century.



Buss Wojtek © Hoaqui, Paris

The Pont Adolphe. In background, the state Savings Bank.

Its strategic location made Luxembourg a very attractive prize for the great continental powers and dragged it into the upheavals of European politics. After becoming part of the possessions of Philip the Good, Duke of Burgundy, in the fifteenth century, the Duchy passed into the hands of the Spanish Habsburgs, who considerably reinforced the fortress when it came under threat from the French. After being besieged by Vauban, it eventually fell to Louis XIV in 1684. A skilled strategist and military engineer, Vauban then extended the fortifications up to the top of the promontory, from which he had succeeded in breaching the town's defences.

Luxembourg remained in the hands of the Austrian Habsburgs for most of the eighteenth century, then fell to the army of the French Republic in 1795, before becoming part of the German Confederation in 1815. The Congress of Vienna, which redrew the political map of Europe, made Luxembourg a Grand Duchy. The city, occupied by Prussian troops who further reinforced its fortifications, became a "federal fortress" designed to act as a barrier against the French. But at the London Conference of 1867 a treaty signed by the great powers of the time in the hope of preventing a Franco-Prussian war stipulated that the Grand Duchy should remain in a state of "perpetual neutrality", that the Prussian garrison should withdraw from the fortress, and that its imposing fortifications should be dismantled. The dismantling process, which took sixteen years, resulted in the disappearance of one of the most powerful strongholds in Europe, once called "the Gibraltar of the North".

Initially regarded as a disaster by the city's burghers, the treaty had a beneficial effect on Luxembourg. The removal of the fortifications opened up a large area of building land and offered undreamt-of growth possibilities. Parliamentary buildings were erected, new districts such as the Plateau Bourbon became urbanized, and cultural institutions were sited there. The price to be paid for this boom was the loss of a unique heritage of military architecture, the surviving remnants of which form part of the historic site placed on the World Heritage List in December 1994.

INSPIRATION FOR ARTISTS AND WRITERS

The different powers that ruled Luxembourg from the sixteenth to the nineteenth centuries left their stamp on the city's military and civilian architecture through a process of historical superimposition. But the site is chiefly interesting because of the boldness with which the city blends into a landscape whose beauty has impressed many great artists and writers.

There exist 338 street plans, maps and drawings of Luxembourg which make it possible to chart its development both spatially and temporally. Many artists have painted views of the fortified town. Goethe made a series of pencil sketches and drawings heightened with wash and sepia. But there

The European Court of Justice building on the Kirchberg plateau.

Christian Sappa © Rapho, Paris

can be little doubt that it was J.M.W. Turner who, in his twenty-odd water-colours of the site, best captured its atmosphere.

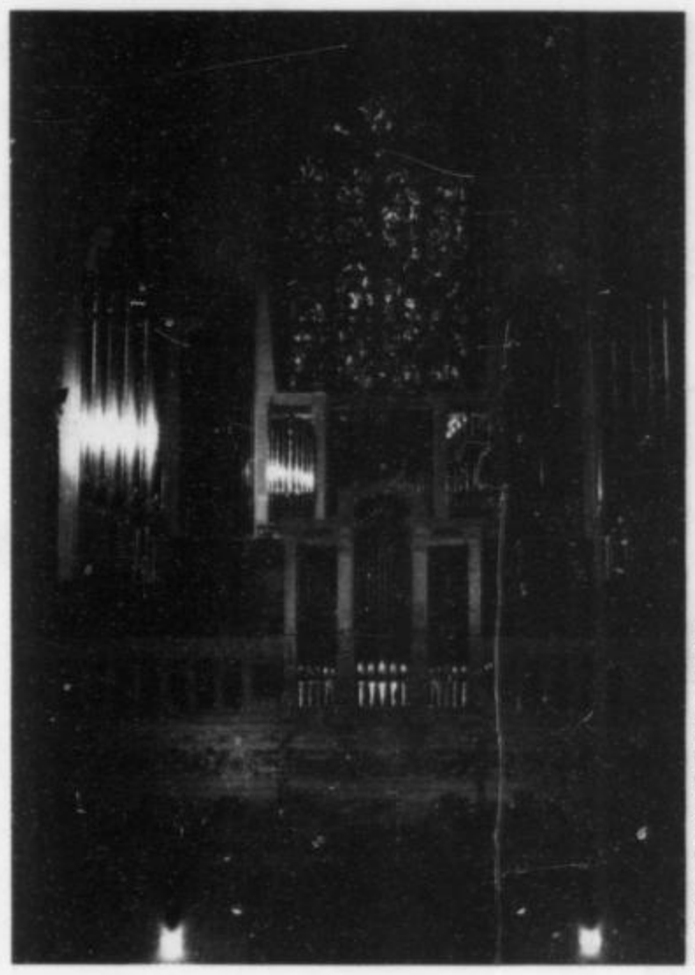
RELICS OF A PRESTIGIOUS PAST

It is true that Luxembourg lost much of its architectural heritage as a result of the military attacks to which it was constantly subjected. Gone are its feudal castle, which was destroyed by a gunpowder explosion in 1554, the sumptuous Renaissance buildings put up by Governor Pierre-Ernest de Mansfeld, which fell in ruins in the seventeenth century, and the fortress walls, which were for so long a threat to peace in Europe.

But important relics of Luxembourg's prestigious past have survived, such as the Eglise St.-Michel, which is over 1,000 years old, and Notre-Dame cathedral, a national shrine and place of annual pilgrimage, whose three spires can be seen from far outside the city. There are also some superb seigneurial residences, such as the Hôtel de Bourgogne, seat of the presidency of the government, the Maison de Cassal, the Hôtel de Raville, and the Maison Mohr de Waldt. Also of great interest to visitors is the Grand Ducal Palace, whose fine façade shows the influence of the Spanish Renaissance.

Above all, an elusive spirit of place has survived intact in Luxembourg. The visitor can sense it in the steep and narrow medieval streets; on the cliff-top esplanade, known as "the balcony of Europe"; in the casemates dug by Habsburg troops, in which the whole population of the Grand Duchy could hide; in the back streets of the lower town; at a bend in the Alzette River, where one might almost be in some Venetian *calle*; on the surrounding hills, which offer the finest views over the Bock—the "Acropolis", where Melusina[1] is thought to be sewing a linen blouse, the completion of which will herald the collapse of the castle.

Apart from its legends, perhaps Luxembourg can be regarded as a European paradigm. After being subjected for so long to the ravages of war, the city now embodies what was, perhaps, Lucilinburhuc's true mission: the desire for peace in Europe. ■



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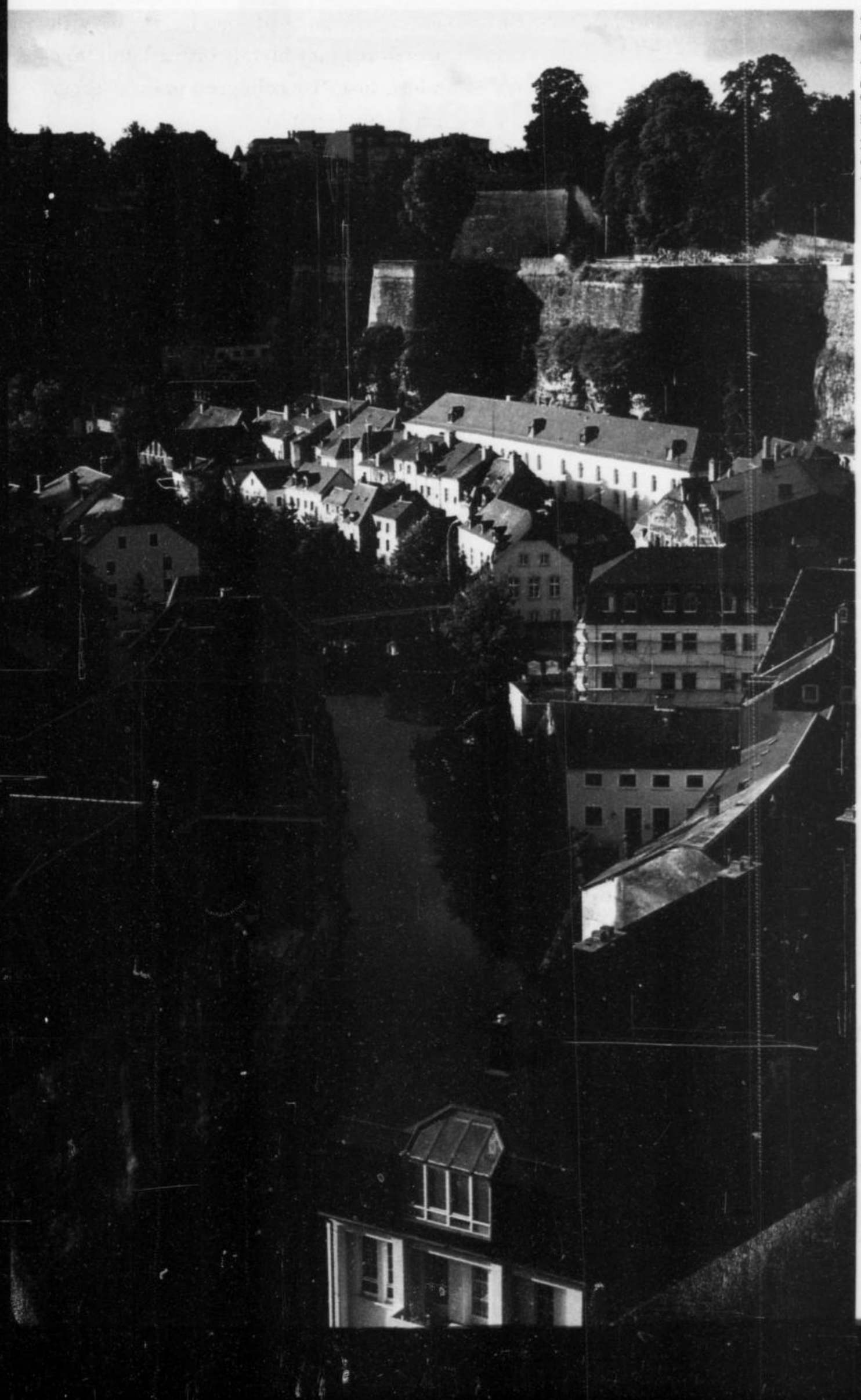

A. Soldeville © Rapho, Paris

Above, the organ loft (1620-1622) by Daniel Muller in Notre-Dame Cathedral.

Grund, Luxembourg's lower town, on the banks of the Alzette (left).

1 Melusina: a fairy of popular legend. Her union with a mortal guaranteed the fertility of the people's land and the prosperity of their homes.—Ed.

JEAN-PIERRE KRAEMER,
of the Grand Duchy of Luxembourg, is president of his country's National Commission for UNESCO.

A ban on war

by Lord Boyd Orr

Nobel Peace Prizewinner (1949)

People foolishly believe that if they ban the hydrogen bomb they have finished. Make no mistake: if a war starts, every hydrogen bomb and every weapon of war will be thrown in. The only way to save humanity is to ban war itself. ■

Which road will humanity take?

by Nikolai Semenov

Nobel Prizewinner for Chemistry (1956)

War is a relic from the past, a terrible and barbarous survival which should have no place in a civilized world. The menace of war has a disastrous psychological effect in people and entails the squandering of a vast amount of labour and resources; an enormous number of men do nothing but learn how to kill one another. The overall effect is to prevent nations from concentrating their efforts and using their resources to improve living standards, to enrich their cultural life and to assist economically under-developed countries; it prevents them from feeding and clothing their people properly and hinders normal technological development.

The most important task today is to end this nightmare. A unanimous and active world opinion could have a decisive effect in settling these questions, leaving aside other relatively secondary problems not directly related to them.

In this collective effort to safeguard international peace, to ban the testing of nuclear weapons and these weapons themselves and to abolish war, the scientists, in all countries, who are sincerely concerned for man's future and for the progress and integrity of science, must unite and take a leading part.

I am convinced that the vast majority of true scientists do not work simply for the money they earn. Thus they cannot stand idly by while science is destroyed and the prospects which are opening up for it are brought to nothing. It is a great blow for us to see the results of our scientific work used to the detriment of mankind, and in the present case we cannot tolerate it. We scientists must not stifle our humanitarian feelings but on the contrary, give them full freedom, as should every honest person. We should be keenly aware of our responsibilities, and then act accordingly, uniting our efforts to solve these problems.

All of us living in the twentieth century, whether scientists or not, have a great obligation, not only to ourselves but to future generations. If we succeed in dispelling the heavy threat of war and concentrating our efforts on opening up a new and enlightened era, mankind can look forward to a truly happy existence even during our own century. ■

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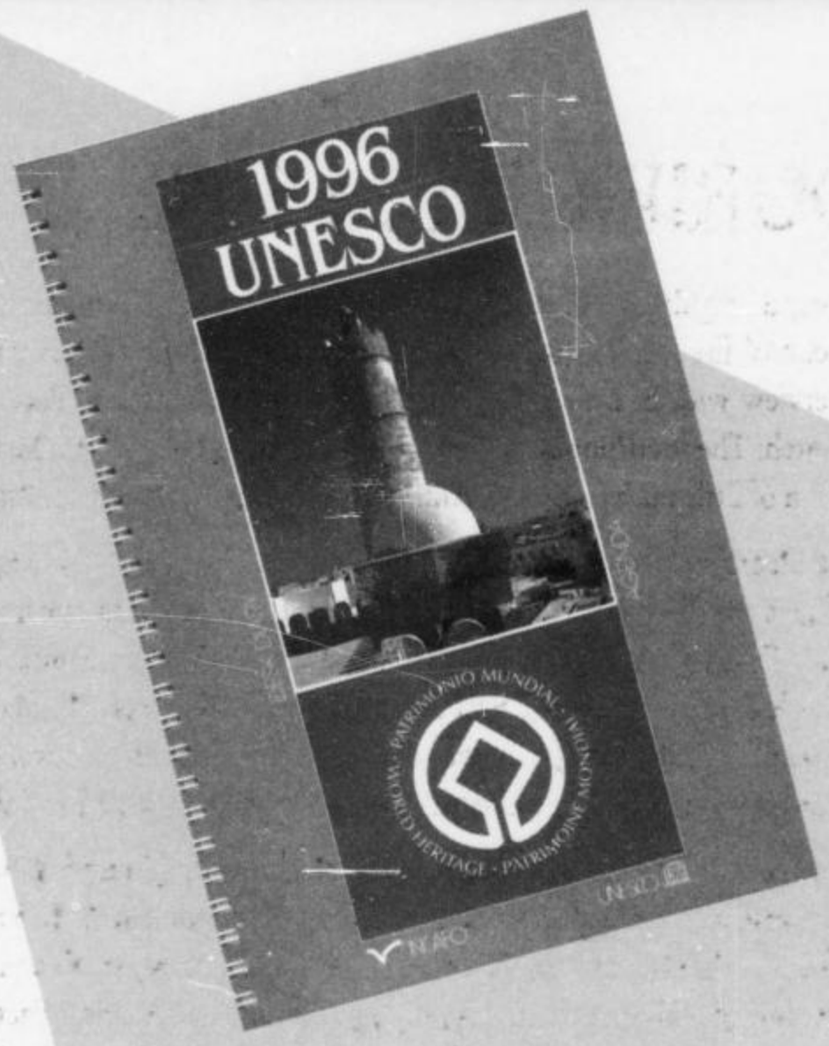

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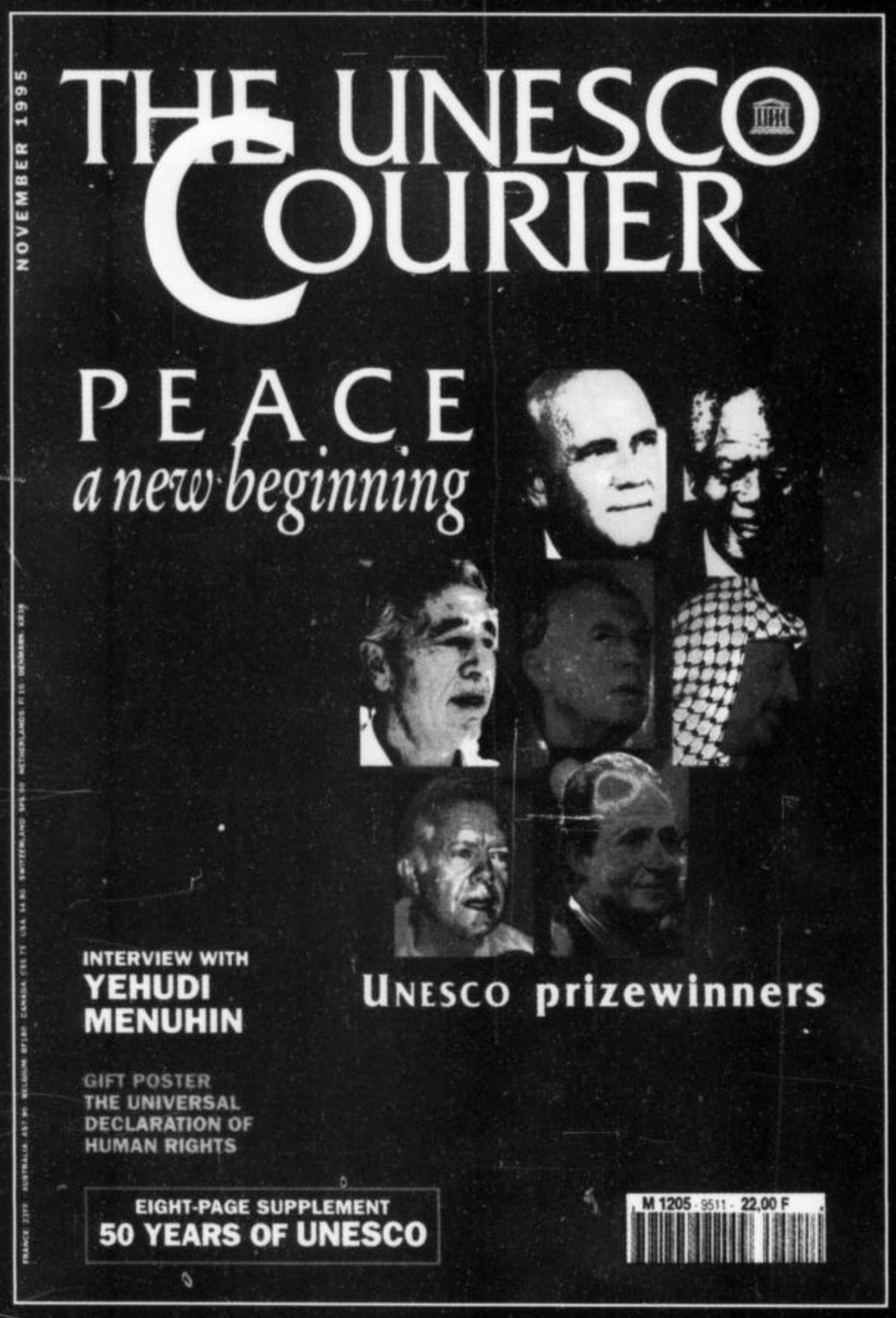
DANCE

INTERVIEW WITH MAURICE BÉJART

HERITAGE: THE TEMPLE OF APOLLO EPICURIUS

ENVIRONMENT: GREEN CROSS INTERNATIONAL



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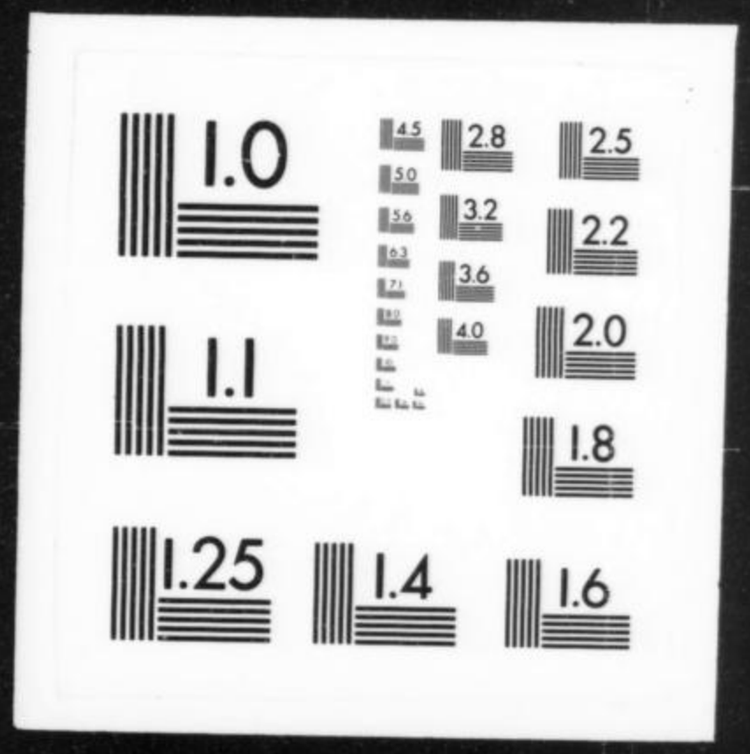
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